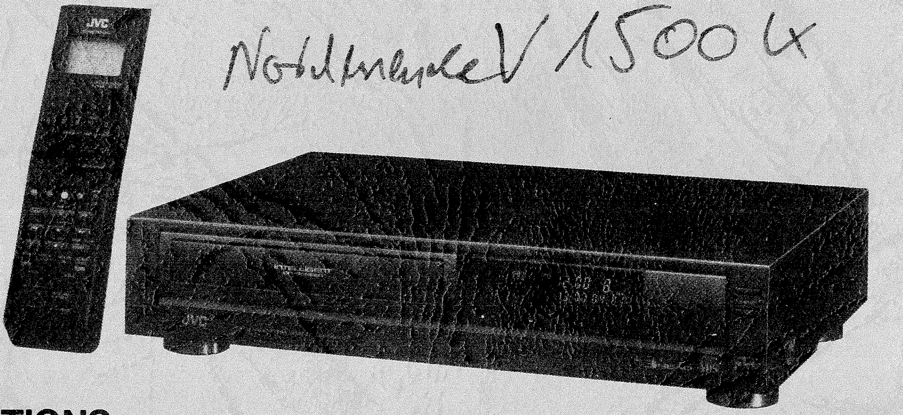
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER VHS PAL

HR-D580E/EG

Nordmende V 1500 LX



SPECIFICATIONS

GENERAL

Power requirement	:	AC 220 V∼, 50/60 Hz
Power consumption	:	27 W
Temperature	:	5°C to 40°C (Operating)
	:	–20°C to 60°C (Storage)
Operating position	:	Horizontal only
Dimensions (WxHxD)	:	435 x 94 x 334 mm
Weight	:	5.3 kg
Format	:	VHS PAL standard
Tape width	:	12.65 mm
Tape speed	:	23.39 mm/sec
Maximum recording time	:	240 min. with E-240 video cassette

VIDEO

Signal system	:	PAL colour and CCIR monochrome signals, 625 lines/50 fields
Recording system	:	Rotary, two-head helical scan system with a slant double-azimuth combination video head
Input	:	0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output	:	1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio	:	43 dB (Rohde & Schwarz noise meter) with BILDSCHÄRFE control at centre position
Horizontal resolution	:	250 lines with BILDSCHÄRFE control at centre position

AUDIO

Recording system	:	Longitudinal track
Input	:	–3.8 dBs, (CENELEC standard), more than 50 k-ohms, unbalanced
Output	:	–3.8 dBs, (CENELEC standard), less than 1 k-ohm, unbalanced (100 k-ohms, load)
Frequency range	:	70 Hz to 10,000 Hz

TUNER

Tuning system	:	Frequency synthesized tuner
TV channel storage capacity	:	48 positions (+ AUX position "AU")
Channel coverage	:	VHF 47 — 111 MHz 111 — 300 MHz UHF 470 — 862 MHz
Aerial output	:	UHF channel 36 (adjustable 32 — 40)

TIMER

Clock reference	:	Quartz-crystal
Programme capacity	:	1-year/8-programme timer
Memory back-up time	:	Minimum 3 min.

ACCESSORIES

Provided accessories	:	Aerial cable, Infrared remote control unit, "R6" battery x 2
Optional accessories	:	VPV adapter VU-V120E VPT adapter VU-V140E

Design and specifications subject to change without notice.

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No. 82168
March 1990

NOTE: For a technical description, please refer to Technical Guide VTG82052 HR-D580 PAL.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

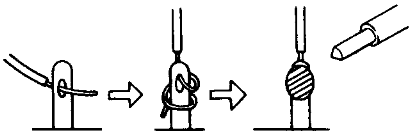


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

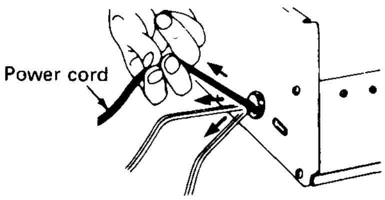


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

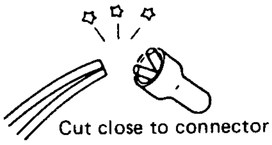


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

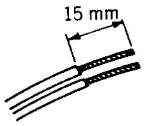


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

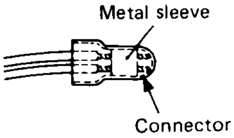


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

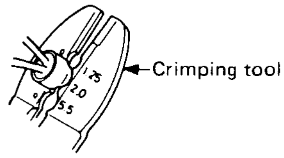


Fig. 6

(5) Check the four points noted in Fig. 7.

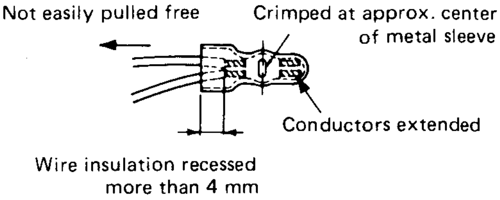

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

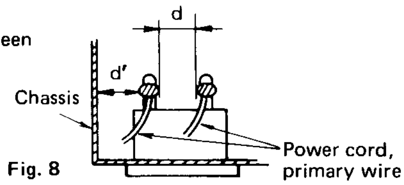


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

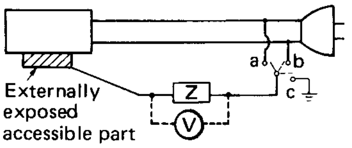


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

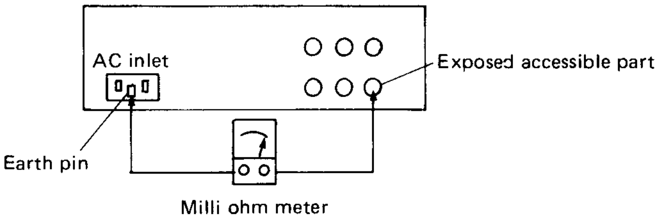


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 µF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

SAFETY PRECAUTIONS

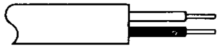
The rating plate and the safety caution are on the rear of the unit.

WARNING — DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

IMPORTANT (In the United Kingdom)
Mains Supply (240 V∿; 50 Hz only)

IMPORTANT

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with the following code:



If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt — consult a competent electrician.

CAUTION

- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

Omkopplaren BETRIEB på denna apparat är sekundärt kopplad och skiljer inte apparaten från nätet i läge BETRIEB OFF.

The BETRIEB button does not completely shut off mains power from the unit, but switches operating current on and off.

BEMAERK: I stilling OFF er apparatet stadig forbundet med lysnettet Hvis det ønskes fuldstændig afbrudt skai netledningen trækkes ud.

The unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

WARNING
There are two different types of SECAM colour systems: SECAM-L, used in FRANCE (also called SECAM-West), and SECAM-B, used in the GRD, e.g. (also called SECAM-East).

1. This recorder can also receive SECAM-B colour television signals for recording and playback.
2. Recordings made of SECAM-B television signals produce monochrome pictures if played back on a video recorder of SECAM-L standard, or do not produce normal colour pictures if played back on a PAL video recorder with SECAM-B system incorporated (even if the TV set is SECAM-compatible).
3. SECAM-L prerecorded cassettes or recordings made with a SECAM-L video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used for the SECAM-L standard. Use a SECAM-L recorder to record SECAM-L signals.

IMPORTANT: It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.

VHS PAL HQ

- Only cassettes marked "VHS" can be used with this video recorder.
- HQ VHS is compatible with existing VHS equipment.

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PRECAUTIONS

VIDEO RECORDER

Handling and storage

- Avoid using the recorder under the following conditions:
  - — extremely hot, cold or humid places,
  - — dusty places,
  - — near appliances generating strong magnetic fields,
  - — places subject to vibrations, and
  - — poorly ventilated places.
- Be careful of moisture condensation.
- Avoid using the recorder immediately after moving from a cold place to a warm place. The water vapour in warm air will condense on the still-cold video head drum and tape guides and may cause damage to the tape and the recorder.
- Handle the recorder carefully
  - Do not block the ventilation openings.
  - Do not place anything heavy on the recorder.
  - Do not place anything which might spill and cause trouble on the top cover of the recorder.
  - Use in horizontal (flat) position only.
- In case of transportation,
  - Avoid violent shocks to the recorder during packing and transportation.
  - Before packing, be sure to remove the cassette from the recorder.

Moisture condensation

- If you pour a cold liquid into a glass, water vapour in the air will condense on the surface of the glass. This is called moisture condensation.
- Moisture condensation on the head drum, one of the most crucial parts of the video recorder, will cause damage to the tape.
- Moisture condensation is apt to occur under the following conditions:
  - — when the recorder is moved from a cold place to a warm place, and
  - — under extremely humid conditions.
- In conditions where moisture condensation may occur, keep the power cord plugged in an AC outlet and the power switched on; this will help prevent condensation from occurring. When condensation has occurred, it will not evaporate quickly once the power is switched on. Wait a few hours for the recorder to become dry.

VIDEO CASSETTES

- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet) and dusty places.
- Place the cassettes in cassette cases and position vertically.

REMOTE CONTROL UNIT

- Avoid violent shocks, especially take care not to drop the unit.
- Take care not to allow liquid to spill into the unit.
- Do not place heavy objects on the unit.
- Avoid leaving the unit in places subject to direct sunlight or extremely high temperatures.

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FEATURES

MAIN FEATURES, ADVANTAGES AND BENEFITS

Feature	Advantage	Benefit
Quick-Response Full-Loading Mechanism	■ Quick response: 1.3 seconds from Stop to Play or Record. ■ Increased Rewind/Fast-Forward speed.	■ Immediate, no-frustration operation of VCR. ■ Faster Rewind/Fast-Forward saves time.
Digital Tracking	Microcomputer-controlled tracking system maintains constant optimal video tracking.	Best possible picture performance, even for rental videos, is always assured.
Intelligent Blank Search System	Microcomputer-controlled system automatically seeks out the unrecorded portion on a tape (absence of control pulses) and automatically displays tape's remaining time.	■ Makes additional recording onto partially recorded tapes more simple and convenient. ■ Allows more efficient use of tapes.
Intelligent On-Screen Display System	On-screen display system for timer programming and mode check. You can select German, French, Italian or English for on-screen messages.	■ Easy-to-do, easy-to-see timer programming on the big, bright TV screen. ■ Dual-screen programming convenience in conjunction with remote's LCD.
Automatic Repeat Playback (possible up to 5 times)	■ Full Repeat: repeated playback of whole tape. ■ Index Repeat: repeated playback of segment located between two index codes.	You can repeatedly view favourite scenes with ease.
VPT-TOP Compatibility	Simply by connecting JVC's optional teletext adapter (VU-V140E), you add many extra features to the VCR; teletext viewing, simplified timer programming with auto VPS, and much more.	■ Compatibility with TOP system, as well as virtualy all other teletext systems. ■ Complete access to many valuable teletext services. ■ Viewing, recording, and timer-recording of closed-caption broadcasts; ideal for hearing-impaired viewers. ■ Automatic timer programming via the teletext schedule page; no need to refer to any printed TV guide.

OTHER KEY FEATURES

DA-3 (Double-Azimuth 3-Head) System — Makes possible noiseless stills, frame advance, slow and reverse slow, variable-speed search in both directions, and shuttle search with lock.

Realtime Go-To — Locates a point a specified time away from the beginning of the tape.

Realtime Search — Locates a point a specified time away from the current position.

Index Search — Automatic location of up to 99 index coded programmes. You can mark/erase index codes.

Intro Search — Plays back the beginning of each indexed programme for about 5 seconds in fast-motion.

Skip Search — Skips unwanted tape segments 1/2 to 2 minutes in length.

Duet Editing — Allows simultaneous control of two JVC VCRs by one remote control when editing.

Flexible timer functions — Timer programming flexibility thanks to 1-year/8-event timer, 24-hour instant timer, and "off" timer.

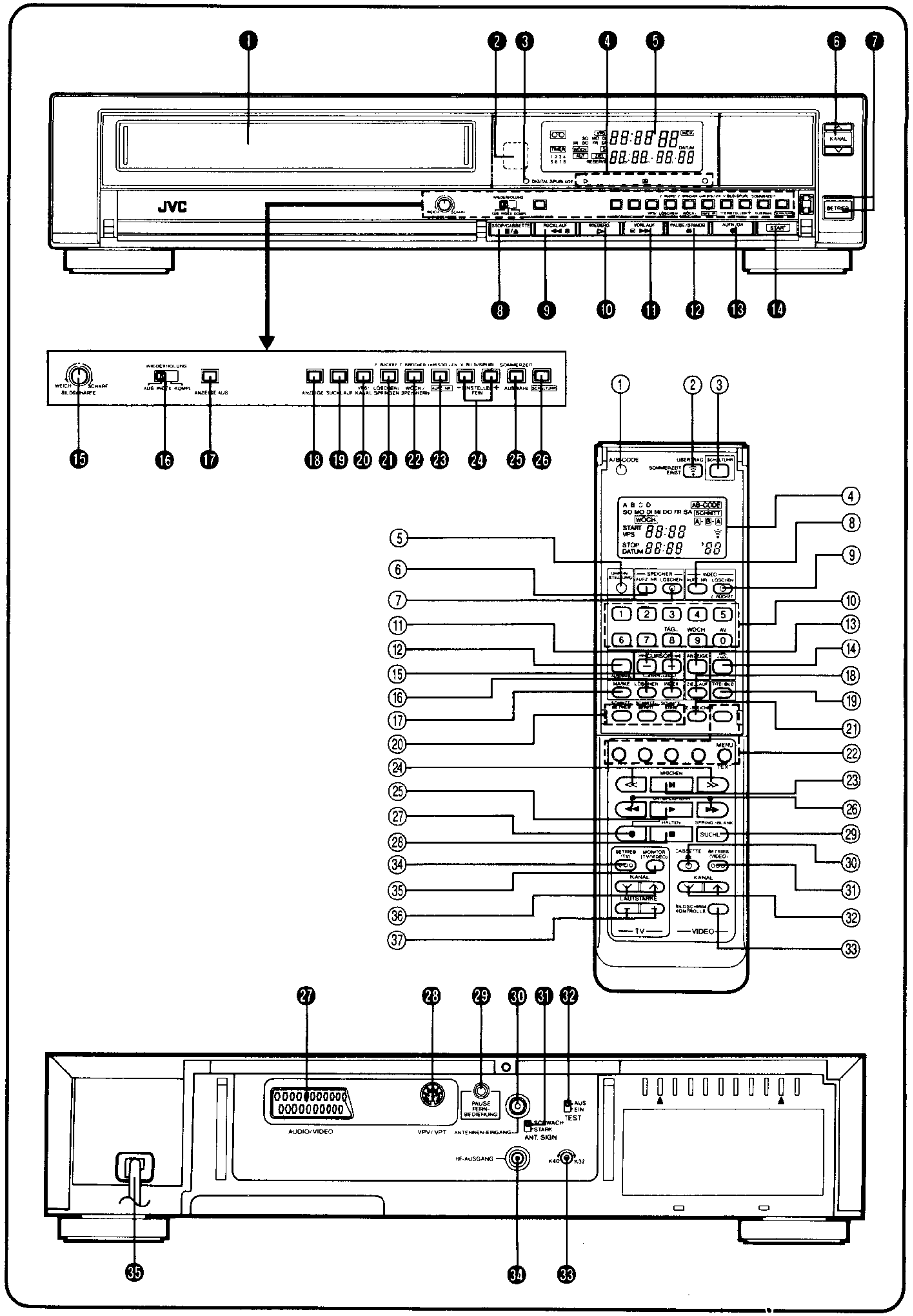
LCD-programmable, TV/VCR unified remote control — The remote's 4 independent programme memories make anytime anywhere programming possible for later transfer to the VCR's timer.

Instant "summer time" adjustment — One-button adjustment of VCR's clock to and from daylight saving time.

Child Lock system — Temporarily disables VCR's controls to deter unwanted operation.

Display OFF function — Can switch off FDP to eliminate bothersome light and reduce chances of theft.

Preroll-capable pause remote control terminal — For superior quality edits when used in an editing suite.



CONTROLS, INDICATORS AND CONNECTORS

Refer to diagrams on the front foldout page.

Front panel

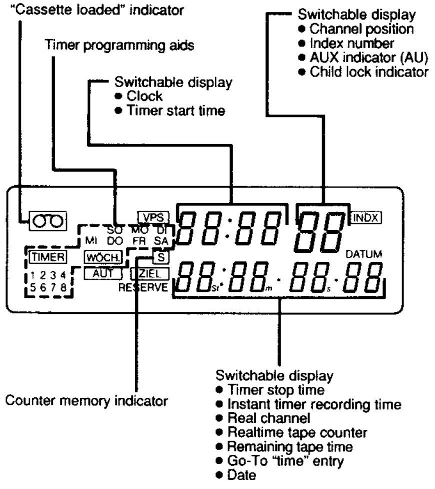
❶ **Cassette loading slot**
Insert a VHS cassette. The door will close and the "cassette loaded" indicator will appear on the FDP (fluorescent display panel).

❷ **Infrared beam receiving window**

❸ **Digital tracking indicator (DIGITAL SPURLAGE)**
Lights in the Digital Tracking mode.
Blinks while adjusting.

❹ **Mode indicators**
▷ : Play mode
▷ ▯▯ : Still mode
▷ ○ : Record mode
▷ ▯▯ ○ : Record-Pause mode

❺ **Fluorescent Display Panel (FDP)**



❻ **TV programme buttons (KANAL)**
Press either button to scan to a desired channel.

❼ **Operate button (BETRIEB)with LED indicator**
Press to apply operating power to the recorder. Loading a cassette also turns the power on.

❽ **Stop/Eject button (STOP/CASSETTE)**
- Press while in the Stop mode to eject the cassette.
- Press while in other modes to stop the tape.

❾ **Rewind/Shuttle Search buttons (RÜCKLAUF)**
- Press while in the Stop mode to rewind the tape.
- Press while in the Play mode for Shuttle Search in the reverse direction.
- Press while in the Record-Pause mode to engage the Retake mode. (See page 48.)

❿ **Play button (WIEDERG.)**
- Press to play back a tape.
- Press to cancel the Pause/Still or Shuttle Search mode. (See page 46.)
- Press to start recording from the Record-Pause mode.

⓫ **Fast-Forward/Shuttle Search buttons (VORLAUF)**
- Press while in the Stop mode to fast-forward the tape.
- Press while in the Play mode for Shuttle Search in the forward direction.
- Press while in the Record-Pause mode to engage the Retake mode. (See page 48.)

⓬ **Pause/Still button (PAUSE/STANDB.)**
- Press while in the Record mode to stop the tape temporarily to avoid recording of unwanted material.
- Press while in the Play mode to view a still picture.
- The still picture can be advanced each time this button is pressed.

⓭ **Record/Instant Timer Record button (AUFN./DA)**
- Press once to start recording.
- Press twice to engage the Instant Timer Recording mode.
- Also use to set the required recording time in the 24-Hour Instant Timer Set mode.

⓮ **START button**
Press to engage the 24-Hour Instant Timer Set mode. (See page 49.)

⓯ **Picture sharpness control (BILDSCHÄRFE)**
Turn this knob clockwise to make the picture sharper. Turn counterclockwise to give the picture a softer tone. Effective only for playback pictures. (No effect on recording.)

⓰ **Repeat switch (WIEDERHOLUNG)**

KOMPL.:	To play back the entire tape repeatedly.
INDEX:	To play back a segment between two adjacent index codes. (See page 45.)
AUS:	No repeat playback.

⓱ **Display off button (ANZEIGE AUS)**
To turn off the FDP.

⓲ **Display button (ANZEIGE)**
Press to switch the display among the realtime tape counter, remaining tape time and date. Also press to change the display from the Timer Set mode to the Clock mode.

⓳ **Search button (SUCHLAUF)**
Press to initiate real channel automatic scan tuning. (See page 42.)

⓴ **VPS/Channel set button (VPS/KANAL)**
This is a dual-function button.
- as a VPS button — press to enter the VPS command while in the Timer Set mode.
- as a KANAL button — press to engage the Real Channel mode.

㉑ **Cancel/Counter reset/Skip button (Z.-RÜCKST./LÖSCHEN/SPRINGEN)**
This is a triple-function button.
- as a Z.-RÜCKST. button — press to reset the realtime counter reading to "0St 00M 00S".
- as a LÖSCHEN button — press to cancel the programmed data in the Timer Set mode.
- as a SPRINGEN button — press to skip unnecessary channels in the Real Channel mode.

㉒ **Repeat/Counter memory/Store button (Z.-SPEICHER/WÖCH./SPEICHERN)**
This is a triple-function button.
- as a Z.-SPEICHER button — press to engage the Counter Memory mode.
- as a WÖCH. button — press to enter the repeat command in the Timer Set mode.
- as a SPEICHERN button — press to store the tuned-in channel in the Real Channel mode.

㉓ **Clock adjust/Programme button (UHR STELLEN/AUFZ. NR.)**
Press to change the recorder's mode in the following order: Clock mode, Timer Set mode, Clock Set mode, then return to the Clock mode.

㉔ **Vertical lock/Tracking/Set/Fine buttons (V-BILD/SPURL./EINSTELLEN/FEIN) (–/+)**
These are quadruple-function buttons.
- as V-BILD buttons — press either to reduce vertical vibrations, if observed in the Still mode.
- as SPURL. buttons — press both to cancel the automatic Digital Tracking mode, then press either for manual tracking control. (See page 44.)
- as EINSTELLEN buttons — press to set the correct data in the Clock Set or Timer Set mode.
- as FEIN tuning buttons — press to shift the frequency in either direction to fine-tune in a specific station in the Real Channel mode.

㉕ **Summer time adjust/Select button (SOMMERZEIT/AUSWAHL)**
This is a dual-function button.
- as a SOMMERZEIT button — press and quickly release to advance the clock by one hour, hold it pressed for 2 seconds to set the clock back by one hour. (See page 39.)
- as a AUSWAHL button — press to select the item to be set in the Clock Set, Real Channel or Timer Set mode.

㉖ **Timer button (SCHALTUHR)**
Press to engage the Timer Standby mode.

Rear Panel

㉗ **AUDIO/VIDEO socket**
A 21-pin standardised audio/video input/output socket for AV connection to a TV or a 2nd video recorder. The input from this socket can be recorded in the AUX mode engaged by obtaining "AU" in the channel display.

㉘ **VPV/VPT connector**
Connect the VPT (VPV) adapter for decoding teletext programmes and for teletext timer programming.

㉙ **Remote pause terminal (PAUSE FERNBEDIENUNG)**
When using the HR-D580EG as the source player, connect to the PAUSE OUT terminal of a second VCR (if so-equipped) for synchronized preroll operation. This terminal can also be used for editing from a JVC VideoMovie camera/recorder using the Master Edit Control system.

㉚ **Aerial input connector (ANTENNEN-EINGANG)**
Connect an aerial to this connector.

㉛ **Attenuator switch (ANT. SIGN.)**
Set to SCHWACH to receive broadcasts from distant stations. Set to STARK to receive broadcasts of high field strength.

㉜ **TEST signal switch**
Set to EIN when tuning your TV receiver for the video channel. A test signal in the form of two vertical white bars will be available.

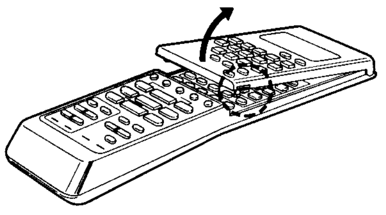
㉝ **RF converter frequency adjustment screw (K40 – K32)**
(See page 38.)

㉞ **RF output connector (HF-AUSGANG)**
Connect to the aerial terminal of a TV receiver through the aerial cable (provided).

㉟ **Power cord**

Remote Control Unit

Grasp the cover where the side tab is located and swing open the cover.

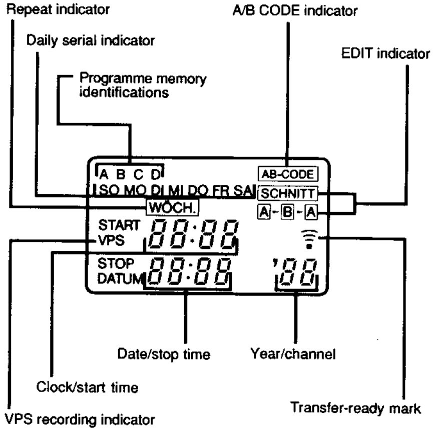


① **A/B-CODE button**
When using two JVC video decks, press to switch this remote control from the "A" mode to "B" mode, or vice versa, depending on the deck to be controlled. (See pages 37 and 56.)

② **Transfer/Summer time adjust button (ÜBERTRAG/SOMMERZEIT EINST.)**
This is a dual-function button.
- as a ÜBERTRAG button — press to transfer the data held in the remote control's timer memory to the recorder.
- as a SOMMERZEIT EINST. button — press to adjust the remote control's clock to the summer time setting. (See page 40.)

③ **Timer button (SCHALTUHR)**
Functions same as ㉖.

④ **LCD (Liquid Crystal Display) panel**
Refer to this panel when programming the remote control's built-in timer memory.



⑤ **Clock adjust button (UHREINSTELLUNG)**
Press to adjust the clock of the remote control.

⑥ **Memory programme button (SPEICHER AUFZ. NR.)**
Press to programme the remote control's timer memory.

⑦ **Memory cancel button (SPEICHER LÖSCHEN)**
Press to cancel the programmed data in the remote *control's timer memory.*

⑧ **Video programme button (VIDEO AUFZ. NR.)**
Press to engage the recorder's Timer Set mode.

⑨ **Video cancel/Counter reset button (VIDEO LÖSCHEN/Z.-RÜCKST.)**
This is a dual-function button.
- as a VIDEO LÖSCHEN button — press to cancel the programmed data held in the recorder's timer memory in the Timer Set mode.
- as a Z.-RÜCKST. button — press to reset the Realtime Counter reading to "0St 00M 00S".

⑩ **Multi-purpose numeric keys**

Clock setting:	See page 40.
Channel selection:	See page 41.
Timer Programming:	See page 51.
Realtime Go-To and Search functions:	See page 53.
Index Search:	See page 54.
External Source recording:	See page 55.

⑪ **Set (–/+)/Cursor (⊢—/—⊣) buttons (EINSTELLEN/CURSOR)**
These are dual-function buttons.
- as EINSTELLEN buttons — press to set the correct data in on-screen remote programming.
- as CURSOR buttons — press to move the cursor to the position for data entry when programming the remote control's timer memory.

⑫ **Select button (AUSWAHL)**
Press to select the item to be set in on-screen remote programming.

⑬ **Display button (ANZEIGE)**
Press to switch the display among the realtime tape counter, remaining tape time and date.
Also press to change the display from the Timer Set mode to the Clock mode.

⑭ **VPS/Channel set button (VPS/KANAL)**
Functions same as ⓴.

⑮ **INDEX button**
Press to engage the Index Search mode. (See page 54.)

⑯ **Erase button (LÖSCHEN)**
Press during playback to erase an index code. (See page 54.)

⑰ **Mark button (MARKE)**
Press during playback or recording to put an index code onto the tape. (See page 54.)

⑱ **Go-To button (ZIELLAUF)**
Press to engage the Realtime Go-To mode. (See page 53.)

⑲ **Intro button (TITELBILD)**
Press to engage the Intro Search mode. (See page 54.)

⑳ **Duet editing mode, Stand-by and Start buttons (SCHNITT-BETRIEB, SCHNITT-BEREIT, SCHNITT-START)**
Duet Editing controls for simultaneous control of two JVC decks in editing. (See page 56.)

㉑ **Counter memory button (Z.-SPEICHER)**
Functions same as ㉒ as a Z.-SPEICHER. button.

㉒ **Teletext buttons**
For teletext operation. (See page 60.)

㉓ **II (Pause/Still) button**

㉔ **<</>> (Variable search) buttons**
Press either button to search for a specific segment of the programme at variable speeds. (For details, see page 46.)

㉕ **► (Play) button**

㉖ **◄◄/►► (Rewind)(Fast-Forward)(Shuttle Search) buttons**

㉗ **● (Record) button**
Press together with the ► button ㉕ to start recording.

㉘ **■ (Stop) button**

㉙ **Skip/Blank search button (SPRING./BLANK SUCHL.)**
- Press in the Stop mode to engage the Blank Search mode. The tape will automatically stop at the beginning of a non-recorded section. (See page 48.)
- Press while in the Play mode to zip through unwanted tape segments. (See page 45.)

㉚ **Eject button (CASSETTE)**
Press while in the Stop mode to eject the cassette.

㉛ **Operate (video) button (BETRIEB (VIDEO))**
Press to turn the recorder power ON or OFF.
Keep this button pressed for 2 seconds when turning the power off to engage the Child Lock mode. (See page 52.)

㉜ **TV programme buttons (KANAL ∨/∧)**
Function same as ❻.

㉝ **On-screen button (BILDSCHIRM KONTROLLE)**
- Press to select the language for on-screen messages.
- Press to cancel instantly the on-screen display (See page 37.)

TV Operation buttons (designated TV models only)

㉞ **Operate (TV) button (BETRIEB (TV))**
Press to turn the TV power on or off.

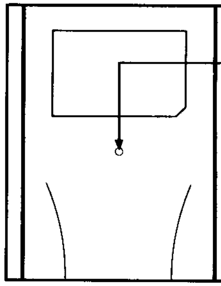
㉟ **MONITOR (TV/VIDEO) button**
Press to select the TV's operating mode.

TV:	For viewing broadcast programmes or tape programmes via HF-AUSGANG connection.
VIDEO:	For viewing programmes via the AV connection.

㊱ **Channel buttons (KANAL ∨/∧)**
Press to select a desired channel on the TV receiver.

㊲ **Volume buttons (LAUTSTÄRKE – / +)**
Press to decrease or increase the TV's sound volume.

Remote Control Unit's RESET button



RESET button
Insert a pointed object into the hole to press the initialize button inside, when required. The memory for the LCD display will be cleared. Normally do not touch this button.

Rear of the remote control

Note:
When the optional VPT (VPV) adapter is connected, all buttons located on the cover of the upper portion of the remote control unit function for teletext operation when the cover is closed. Also four coloured keys and several buttons located on the lower portion of the remote control have additional teletext functions, as indicated by their additional labels.

Remote Control Unit

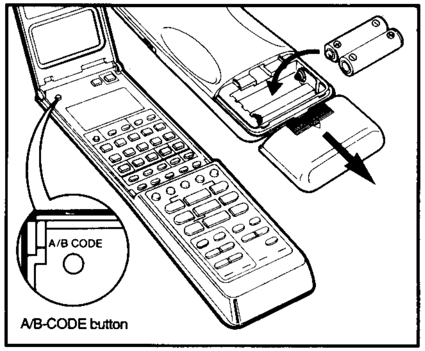
A/B code switching
When you own two JVC video decks, this remote control can operate both decks separately; they do not respond simultaneously to the remote control's signal, if they are set to respond to different codes. Initially this recorder is set in the "A" mode.
To change the mode, carefully follow the instructions below:

(1) Unplug the power cord of the recorder from the AC outlet.
(2) Press the A/B-CODE select button to engage the "B" mode; "B CODE" will appear on the LCD.
(3) Plug the power cord of the recorder into the AC outlet.
(4) Turn on the power of the recorder using the remote control's BETRIEB (VIDEO) button.

The recorder "memorizes" this B code and will respond only to the B code signals. Set the other deck to respond to the A code signals in the same procedure.

Note:
Do not operate other remote controls after you have plugged the recorder into the AC outlet and before you press the BETRIEB (VIDEO) button of this remote control.

CAUTION:
Some televisions may malfunction in response to this remote control when used in the "B" mode. If this should happen, switch the mode back to "A".

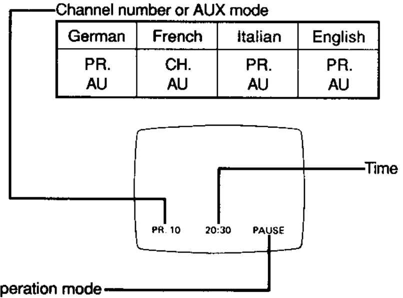


Operating distance for remote control unit
- The maximum operating distance is about 8 m.

Installing the batteries
- Insert two "R6"-size batteries (provided) into the battery compartment on the rear of the remote control unit, observing correct polarity.

ON-SCREEN MODE DISPLAY

Four-language on-screen display is available for timer programming (see page 50) and mode check. To select the language, press the remote control's BILDSCHIRM KONTROLLE button for longer than 2 seconds while a mode check display is on the screen. The screen will display "DEUTSCH", "FRANCAIS", "ITALIANO" and "ENGLISH" in that order where the operation mode is otherwise displayed. Simply release the BILDSCHIRM KONTROLLE button at the language you want.



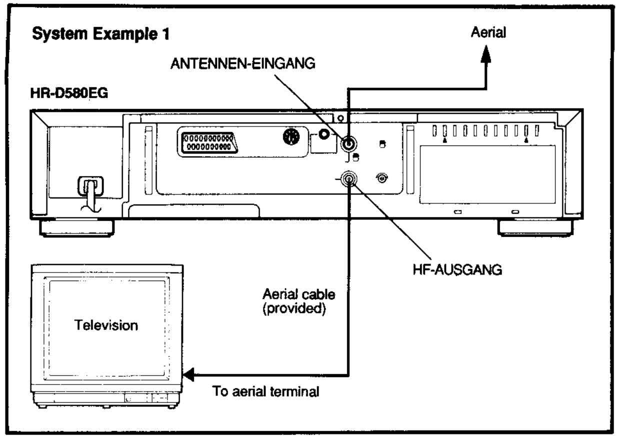
German	French	Italian	English
PR. AU	CH. AU	PR. AU	PR. AU

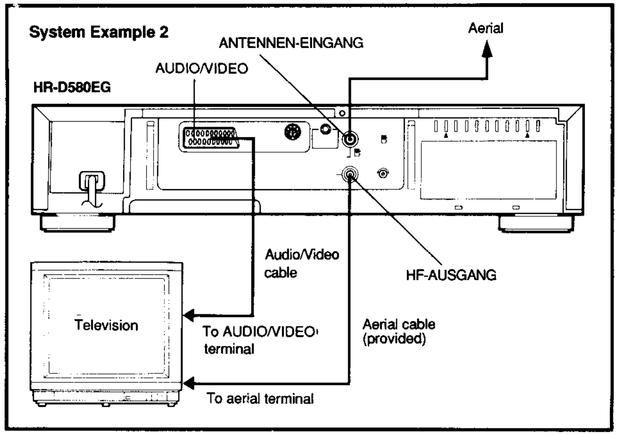
	German	French	Italian	English
• Play mode	LAUF	LECT	RIPRO	PLAY
• Record mode	AUFN	ENR	REG	REC
• Fast forward mode	VL	AV	AVANZ	FF
• Rewind mode	RL	RET	RIAVV	REW
• Pause mode	PAUSE	PAUSE	PAUSA	PAUSE

Automatic indication
- Channel number is displayed each time a different channel (or AUX mode) is selected.
- Time is displayed whenever the channel or operation mode is displayed.
- Mode is displayed for 5 seconds each time the operation mode is changed to Record, Play, Fast Forward or Rewind from any other mode. The PAUSE indication remains on for as long as the Record-Pause mode is engaged.

Manual recall
- For checking of the channel, time, or mode, press the BILDSCHIRM KONTROLLE button. The corresponding indication will be available on the screen for 5 seconds. To instantly cancel the on-screen display, press the BILDSCHIRM KONTROLLE button again.

CONNECTIONS





AERIAL AND RF CONNECTION

1. Remove the aerial cable from the television and reconnect it to the recorder's ANTENNEN-EINGANG connector. The recorder is then ready to record off-air programmes.
2. Connect the recorder's HF-AUSGANG connector to the television's aerial terminal using the provided aerial cable. The television is then ready to receive broadcast programmes. When you are not using the recorder, the TV signals are fed to the television via this terminal.

- If your television is equipped with the aerial terminal only, you view tape programmes also via this terminal. In this case, set the television to UHF channel 36 (or a UHF channel adjusted as the video channel). See "VIDEO CHANNEL SETTING" below.

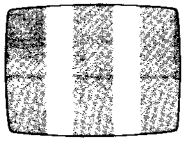
AV CONNECTION

- If your television is equipped with a 21-pin SCART connector, connect the recorder's AUDIO/VIDEO socket to the television's SCART connector.
- To view tape programmes via this connector, set the television to the AV mode.

Note:
For switching the television's input mode, refer to the instruction manual of your television.

VIDEO CHANNEL SETTING

1. Press the BETRIEB button ❶ to turn the power on. Turn on the TV receiver.
2. Set the TEST switch ⓲ to EIN.
3. Adjust your TV receiver in the vicinity of UHF channel 36 until you bring in the two white signal bars on the screen as illustrated. This is your VIDEO CHANNEL.
4. Reset the TEST switch to AUS.



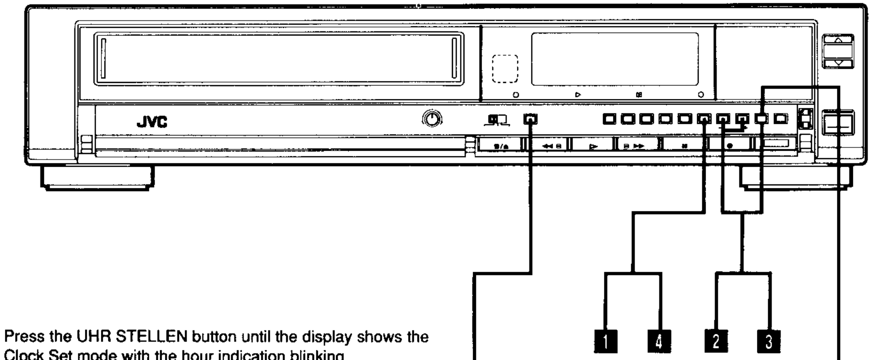
Notes:

- If some interference noise is seen on the screen because of broadcasts on neighbouring channels or if your preset broadcasts should be affected in picture quality, it is necessary to shift the RF converter output frequency from that of channel 36. Consult your JVC dealer for making this adjustment.
- Video channel setting is also possible using a prerecorded VHS video cassette. Play back the tape and tune the TV receiver to obtain clear pictures and sound while monitoring the playback picture on the TV screen.
- If your TV receiver is not provided with an AFC circuit, perform fine tuning of the TV receiver when you are actually viewing video cassettes.

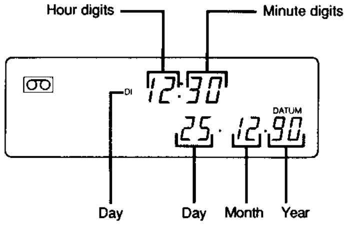
CLOCK SETTING

Setting the built-in clock

Plug the recorder into an AC outlet. The display shows a blinking 0:00.



1. Press the UHR STELLEN button until the display shows the Clock Set mode with the hour indication blinking.
2. Set the hour and minute in that order by using the AUSWAHL and EINSTELLEN buttons alternately.
   - The blinking position is ready for entry.
   - Press EINSTELLEN until the correct indication appears in each position.
3. Set the day, month and year in the same way.
   - In year setting, set only the last two digits of the year.
4. Press UHR STELLEN.
   - Press it at the exact instant of the time signal, and the clock will be set accurately to the present time.
   - The day-of-the-week indication will be displayed automatically.



Notes:

- Clock setting is not possible in the timer recording standby mode. First check to see that the TIMER indicator on the FDP is not lit.
- Enter the data within 10 seconds after pressing the UHR STELLEN button.

SUMMER TIME ADJUST

This convenient feature is for quickly making the annual clock adjustment to the "summer time" (daylight saving time) setting, and back to regular time later.

1. Simply press and quickly release the SOMMERZEIT button in the Clock Set mode to set the clock forward by one hour.
2. Later in the year, to switch back to regular time, simply hold the SOMMERZEIT button pressed for 2 seconds to set the clock back by an hour.

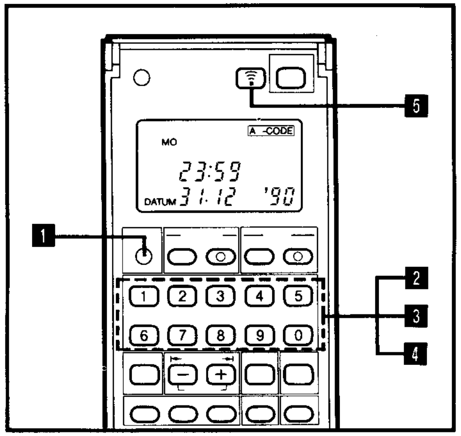
DISPLAY OFF

Press the ANZEIGE AUS button to make all indications on the FDP disappear when they are not required; the display will show "– : –". Press again to make the clock display reappear.

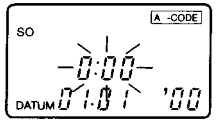
Power failure indicator
The blinking 0:00 (initial condition of the display) is also a power failure indicator, showing that there has been a power failure in excess of 3 minutes. Readjusting the time restores the normal condition of the clock display.

Setting the LCD clock of the remote control unit

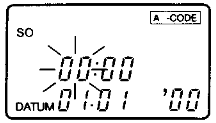
The LCD clock is independent of the recorder's clock.
The recorder's clock can be adjusted from the remote control unit if its transfer function is used.



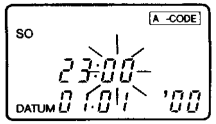
Insert two "R6"-size batteries (provided) into the remote control. The LCD shows the following with "0:00" blinking.



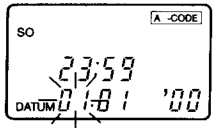
1 Press the UHREINSTELLUNG button.
- The hour indication will blink.



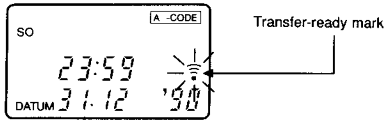
2 Press the numeric key corresponding to the current hour, then the minute indication will blink.
- Always key in two digits.
  For a one-digit number, key in "0" first.



3 Key in the digits corresponding to the current minute, then the day position of the DATUM indication will blink.



4 Key in the digits for the day, month and year in succession.
- In year setting, set only the last two digits of the year.
- After setting the year, the transfer-ready mark will appear and blink.



5 Press the ÜBERTRAG button at the exact instant of the time signal.
- The day-of-the-week indication will be displayed automatically.
- The clock of the remote control will be set accurately to the second and, at the same time the set data will be transferred to the clock of the recorder.
- When it is not necessary to transfer the clock data to the recorder, press the UHREINSTELLUNG button instead of the ÜBERTRAG button to set the remote control's clock.
- If the transfer-ready mark disappears before transmission, press the UHREINSTELLUNG button to make it reappear, then press the ÜBERTRAG button while the transfer-ready mark is blinking; otherwise, the ÜBERTRAG button will function as a summer time adjust button.
- If the clock has already been set, the transfer-ready mark starts blinking when the UHREINSTELLUNG button is pressed.
- To transfer the data to the recorder's clock, simply press the ÜBERTRAG button.
- To readjust the clock, press the UHREINSTELLUNG button and then press either CURSOR ⇤/⇥ button so that the position which requires correction blinks.

SUMMER TIME ADJUST

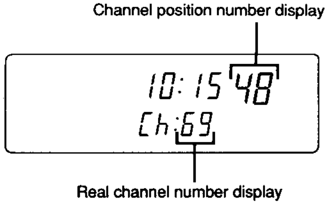
For quickly making the annual clock adjustment to the "summer time" (daylight saving time) setting, and back to regular time later, use the SOMMERZEIT EINST. button ②.

1. Simply press and quickly release the SOMMERZEIT EINST. button in the Clock mode to set the clock forward by one hour.
2. Later in the year, to switch back to regular time, simply hold the SOMMERZEIT EINST. button pressed for more than 2 seconds to set the clock back by an hour.

Note:
- For summer time adjustment, make sure that the transfer-ready mark is not on the LCD.

OPERATING THE BUILT-IN TUNER

This recorder incorporates an advanced frequency synthesized tuner which is pretuned to 91 channels to cover VHF, UHF and CATV broadcasts. Channel indication is given in two different ways: real channel numbers and channel position numbers. Real channel number indication is available by pressing the VPS/KANAL button ⓴ or ⑭, or during search by pressing the SUCHLAUF button ⓳, while channel position number indication is always available in the channel display.



Correspondence between 91 pretuned TV stations and the recorder's real channel indications

DISPLAY	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
VHF	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11 (H1)	E12 (H2)	A	B	C	D	E	F	G	H
DISPLAY	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
UHF	E21	E22	E23	E24	E25	E26	E27	E28	E29	E30	E31	E32	E33	E34	E35	E36	E37	E38	E39
DISPLAY	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
UHF	E40	E41	E42	E43	E44	E45	E46	E47	E48	E49	E50	E51	E52	E53	E54	E55	E56	E57	E58
DISPLAY	59	60	61	62	63	64	65	66	67	68	69								
UHF	E59	E60	E61	E62	E63	E64	E65	E66	E67	E68	E69								
DISPLAY	75	76	77	78	79		81	82	83	84	85	86	87	88	89	90	91	92	93
CATV	X	Y	Z	—	—		S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
DISPLAY	94	95	96	97	98	99	00												
CATV	S14	S15	S16	S17	S18	S19	S20												

Stored channels

A total of 91 channels are receivable. Of them, up to 48 can be stored for easy channel selection. Prior to shipment, some channels are stored.
It is possible to store more channels or skip some channels if there are no broadcasts on those channels in your area. It is possible to change the stored channels to correspond to your preferred channel allocation. Skipped channels can be restored whenever necessary.
- Channel memories are permanent; the programmed channel allocation will not be erased even if the recorder is unplugged from the AC outlet.

Channel selection

To select a channel for recording, normally use the KANAL buttons ❻ (㉜ on the remote control) or 10 numeric keys ⑩. You can choose any channel from among the stored ones by calling up the corresponding channel position number.
- Use the "∨" button to scan to a channel in the direction of decreasing numbers; the "∧" button, in the direction of increasing numbers.
- An invalid number larger than 48 will be rejected.

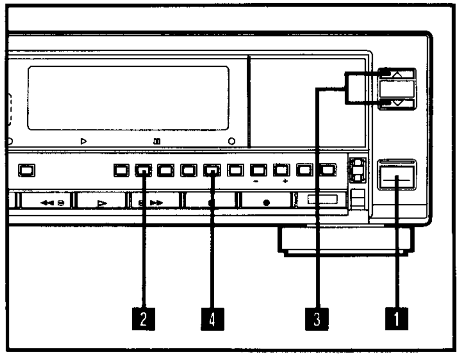
If you want to select a channel other than those stored, engage the Real Channel mode and call up a channel, while referring to the real channel number display.
With recorder's controls:
- Simply press the SUCHLAUF button ⓳.

With remote control
- Press the VPS/KANAL button ⑭ to engage the Real Channel mode and call up a channel by using the 10 numeric keys. For details, refer to the next page.

Storing channels

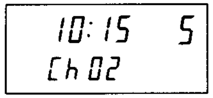
TV receiver

Switch on the TV receiver.
- Set the TV receiver to your video channel or to the AV mode (depending on the connection).



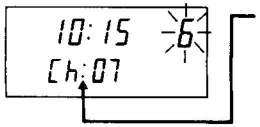
A. Automatic Setting

1. Turn the power on.
   - The display will change from the Date mode to the Counter mode.
2. Press the SUCHLAUF button.
   - The display will change to the Real Channel mode and automatic scanning will take place.
   - Reverse search will be engaged if the SUCHLAUF button is kept depressed.



VHF channel 2 is stored for channel position 5.

- When a broadcast is detected, scanning stops automatically and the displayed channel position number will blink.



"Colon" will appear to indicate that this real channel is not stored for the indicated channel position.

3. Select a channel position into which you wish to store that station by using the KANAL buttons while the channel position number is blinking.
4. After confirming the real channel number and channel position number, press the SPEICHERN button.
   - The Channel position number stops blinking.
   - "Colon" will disappear and the selected station has been stored.

B. Manual Setting from remote control unit

(1) Press the VPS/KANAL button ⑭.
- The display will change to the Real Channel mode.

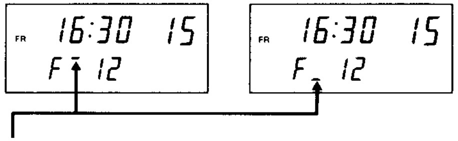
(2) Press VPS/KANAL until the real channel number starts blinking.
- Blinking will stop in 10 seconds.

(3) Enter the number of a real channel to be preset.
- The channel position number will start blinking.

(4) Select a channel position into which the selected real channel is to be stored, using the 10-digit keypad.
- Depress the numeric key for the second digit continuously until blinking stops. This enables the entered number to be stored.
- The display will return to the clock mode by simply keying in the channel number to be viewed.

• Fine Tuning

For fine tuning, press the AUSWAHL button ㉕ in step 3 (both in automatic and manual setting) and use the FEIN "+" or "_" button ㉔; "+" to fine-tune in the direction of increasing frequencies, and "–" to fine-tune in the direction of decreasing frequencies.



Upper or lower "-" sign indicates the operating tuning frequency is above or below the standard broadcast frequency.
Center "-" sign will appear when it corresponds to the standard.

Skipping the stored channels

1. Call up the channel position number that you wish to skip by using the KANAL buttons ❺ or 10 numeric keys ⑩.
2. Press the VPS/KANAL button ⓴.
3. Press the SPRINGEN button ㉑.
   - "Colon" will appear to indicate that the displayed real channel is not stored.
   - The skipped channel number will not appear on the channel display during up/down scan tuning.

Note:

If no command is given after each step of the setting operation, the Real Channel mode will be automatically cancelled in 10 seconds.

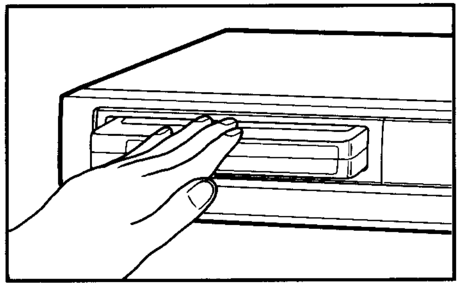
LOADING AND UNLOADING A CASSETTE

Motorized Loading System
- The cassette can be loaded even when the power has not been turned on. Inserting a cassette into the loading slot turns the power on automatically.
- The cassette can be unloaded even when the power has been turned off. If a cassette is inside, pressing the CASSETTE button turns the power on automatically and, after ejection of the cassette, shuts it off automatically.

Auto-Play System
- Inserting a cassette, with its safety tab removed, turns the recorder on and playback of the cassette begins automatically.

LOADING

Insert a cassette as illustrated with its labelled side facing you.
- With a cassette inserted, the"[OO]" indicator appears on the FDP.
- The counter resets automatically when a cassette is inserted.



Notes:
- Be sure to insert the cassette firmly into the slot; otherwise it will be automatically ejected.
- The automatic loading mechanism will operate only when the cassette is inserted correctly.

UNLOADING

Press the STOP/CASSETTE button ●in the Stop mode.

Caution
- If unloading of a cassette is not possible, check to see whether the TIMER indicator is lit. If so, press the SCHALTUHR button so the TIMER indicator extinguishes.
- Do not attempt to pull out the cassette once automatic loading has started.

WARNING
- Do not insert fingers or any foreign object beyond the door flap of the cassette loading slot, as this could lead to injury or damage to the mechanism. Show special caution with children.

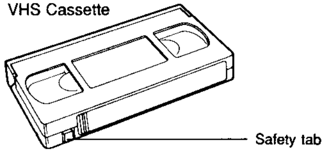
USABLE CASSETTES AND THEIR RECORDING TIME

Both regular VHS and S-VHS cassettes can be used with this video recorder for recording. However, only regular VHS recordings can be made and played back on this video recorder. S-VHS recordings can neither be made nor played back on this video recorder.

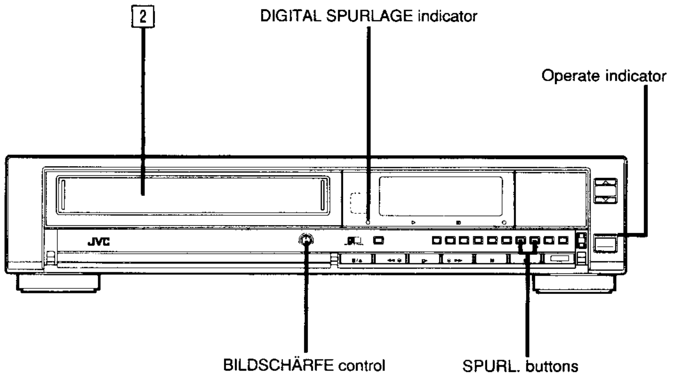
Type of Cassette	Recording/Playback Time
E-30	30 minutes
E-60	1 hour
E-90	1 hour, 30 minutes
E-120	2 hours
E-180	3 hours
E-240	4 hours

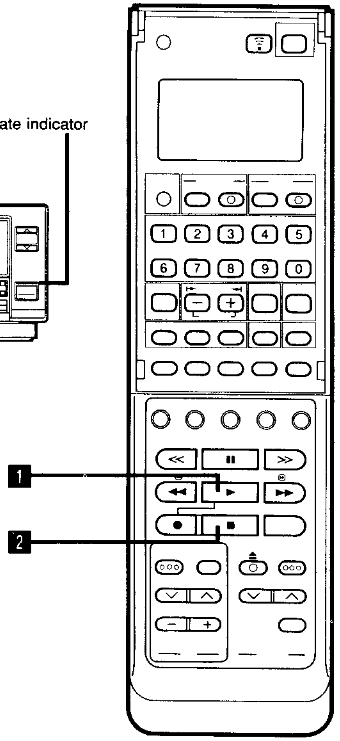
ACCIDENTAL ERASURE PREVENTION

- Video cassettes are equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording cannot be performed. If you wish to record on a cassette whose tab has already been removed, use adhesive tape to block the hole.



PLAYING BACK A VIDEO CASSETTE





PREPARATION

1 Switch on the TV receiver.
  - Set the TV receiver to your video channel or to the AV mode (depending on the connection).

2 Load a pre-recorded cassette.
  - Power will be switched on automatically.
  - When a cassette with its safety tab removed is loaded, playback starts automatically.

DIGITAL TRACKING SYSTEM

This recorder incorporates a digital tracking system for automatic tracking adjustment. In most cases you do not have to adjust the tracking.

- When you start playback after inserting a tape, the digital tracking system automatically adjusts the tape path relative to the heads to obtain the best possible pictures.
- This automatic tracking adjustment also takes place when the playback output level reduces below a certain level.
- The DIGITAL SPURLAGE indicator blinks while the system is searching for optimum tracking, and remains lit as long as the automatic tracking mode continues.

If automatic tracking fails, and some noise bars are visible on the screen, use the manual tracking mode.

- Press both SPURL. buttons simultaneously to cancel the automatic mode, then press either button to move noise bars out of the screen.
- To return to the automatic mode, press both buttons simultaneously.

OPERATING PROCEDURE

1 Press the ► button.

2 Press the ■ button at the end of the programme.

Notes:

- For various convenience facilities and special-effects features available during playback, see the next two pages.
- The tape-end auto-rewind mechanism functions in the Play, Fast Forward and Forward Search modes.

PICTURE SHARPNESS ADJUSTMENT

Images on the screen can be adjusted to a preferred softer or sharper definition by turning the BILDSCHÄRFE control in the corresponding direction.

CONVENIENT FACILITIES RELATED TO PLAYBACK

SKIP SEARCH

During playback, press the SPRING./BLANK SUCHL. button from 1 to 4 times to skip through 30-sec. to 2-min. sections of tape. Playback resumes automatically. Press the ► button to cancel the Skip Search mode midway.

MEMORY PLAY

If you want to watch the tape from its beginning after rewinding, you do not have to wait for completion of rewind to press the ► button.

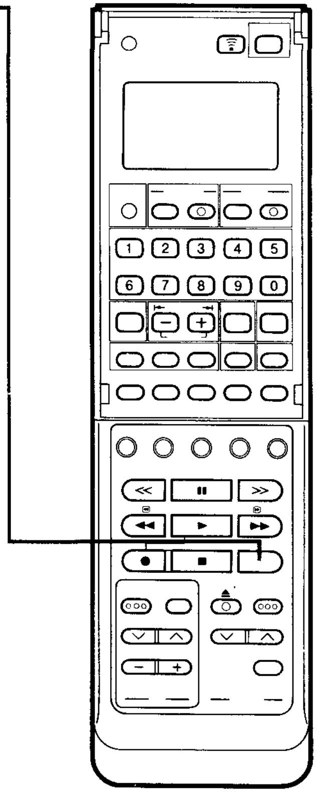
- Press the ◄◄ button and then ► button within 2 seconds. Playback will start automatically at the beginning of the tape. (Check to see that the counter memory indicator [S] is off).
  If you want to watch the tape from the counter reading of "0St 00M 00S", press the Z.-SPEICHER button to obtain [S]. Then, press the ◄◄ (or ►►) button and the ►.
- While the tape is being rewound, the Play (▷) indicator is blinking. To cancel the Memory Play mode and go to another mode, press the corresponding button (■, ►, ►►, ◄◄).

More Next-Function Memory Features

If you are going to eject the cassette, or turn the power off after rewinding the tape, press the CASSETTE or BETRIEB (VIDEO) button within 2 seconds after pressing the ◄◄ button.

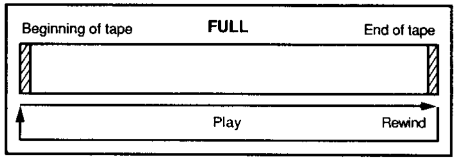
Note:

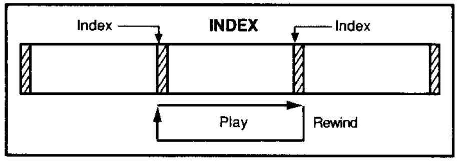
- For various tape access methods that can be used in different applications, refer to pages 53 and 54.



REPEAT PLAYBACK — FULL REPEAT OR INDEX REPEAT

This function allows you to set the video recorder for repeated playback (5 times) of the entire tape ("KOMPL.") or repeated playback (5 times) of a segment of the tape from one index mark to the next ("INDEX").





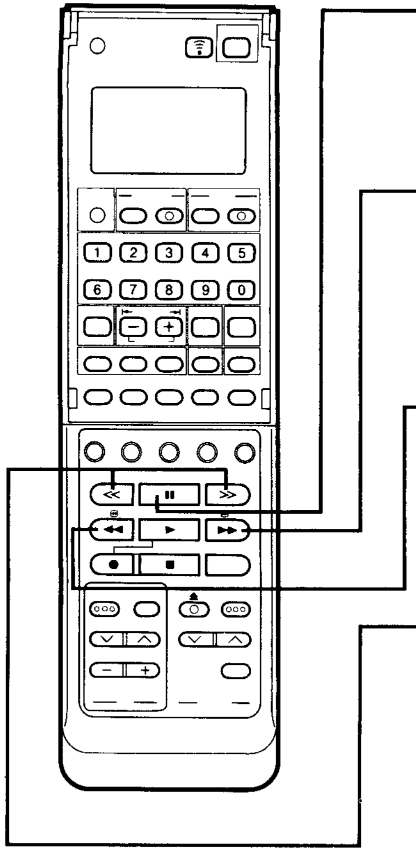
1 Set the WIEDERHOLUNG switch ⓯ as required.

2 With the switch in the INDEX position, you can designate the segment using the Index Search mode or Index Mark function. (See page 54).

Note:

After repeat playback, be sure to reset the WIEDERHOLUNG switch to "AUS".

SPECIAL-EFFECTS PLAYBACK



STILL PLAYBACK AND FRAME ADVANCE

II button

- To view a still picture, press this button in the Play mode.
- To advance the picture frame by frame, press this button again.
- To return to normal playback, press the ► button.
- When the Still mode continues for longer than about 5 minutes, the Stop mode will be entered automatically.

HIGH-SPEED FORWARD SEARCH

►► button

- To fast forward the tape, press this button in the Stop mode.
- To shuttle search the tape in the forward direction, press this button in the Play mode.
- The shuttling speed is about 9 times normal.
- Press the ► button to return to normal playback.
- For briefer scanning, keep the button pressed for more than 2 seconds; when you release the ►► button, the Search mode will be cancelled.

HIGH-SPEED REVERSE SEARCH

◄◄ button

- To rewind the tape, press this button in the Stop mode.
- To shuttle search the tape in the reverse direction, press this button in the Play mode.
- The shuttling speed is about 9 times normal.
- Press the ► button to return to normal playback.
- For briefer scanning, keep the ◄◄ button pressed for more than 2 seconds; when you release the button, the Search mode will be cancelled.

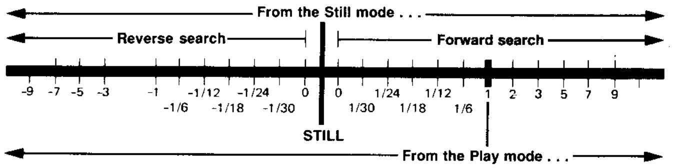
VARIABLE-SPEED SEARCH AND SLOW MOTION

Variable search buttons (<</>>)

The variable search buttons control both the direction and speed of tape search, making possible fast- and slow-motion playback in either forward or reverse direction from either the Still or Play mode.

Operation tips:

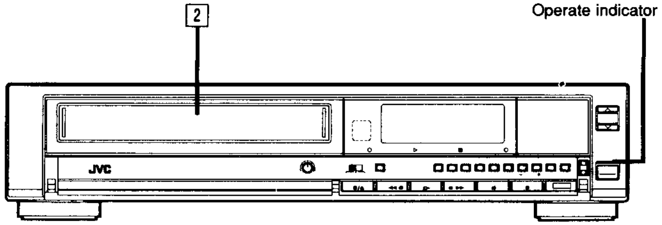
- To increase speed while in the forward direction, press >> repeatedly; to decrease, press << repeatedly. The direction reverses after leaving the Still mode.
- To increase speed while in the reverse direction, press << repeatedly; to decrease, press >> repeatedly. The direction reverses after leaving the Still mode.
- To return to normal playback, press the Play button.

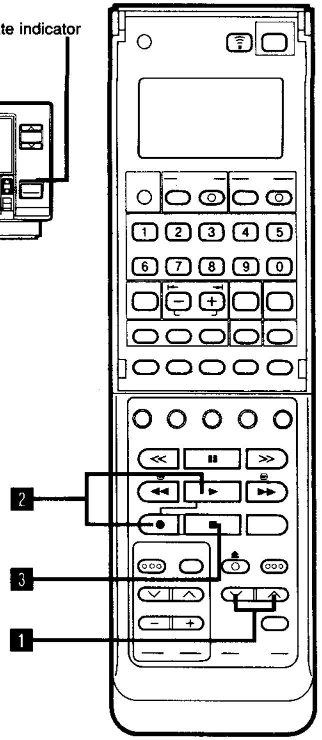


Notes:

- With some televisions, the still picture may be unstable. If vertical vibration of the picture is observed, attempt to correct it by pressing the V-BILD buttons.
- If noise bars are visible in the Special-Effects Playback mode, attempt to correct it in the manual tracking mode as described on page 44.
- No audio is available during any special-effects playback mode.

RECORDING TV PROGRAMMES





PREPARATION

1 Switch on the TV receiver.
- Set the TV receiver to your video channel , or to the AV mode (depending on the connection).

2 Load a cassette (with safety tab in place). Power will be switched on automatically.

OPERATING PROCEDURE

1 Select the channel you wish to record with the KANAL ∨/∧ buttons.

2 Press the ● and ► buttons simultaneously to start recording. "INDX" will appear on the FDP and blink to show that an index code is being recorded.
(When using the video recorder's front panel control buttons, press AUFN./DA once to start recording.)

3 Press the ■ button at the end of the programme.

RECORDING ONE TV PROGRAMME WHILE WATCHING ANOTHER

A programme not being viewed can be recorded while you enjoy viewing another programme.
This permits the recorded programme to be played back later at your convenience.

The key points to remember are:
- Select the channel you wish to record with the recorder's channel selector.
- Select the channel you wish to view with the TV receiver's channel selector.

Notes:

- If the AUFN./DA button is pressed more than once, the Instant Timer Recording mode will be entered (see page 49). To return to ordinary recording, repeatedly press the AUFN./DA button until the AUT indicator on the FDP extinguishes.
- If there is part of the programme you do not want to record, press the II button. To release the Pause mode. Press the ► button.
- When recording is restarted from the Record-Pause mode, assemble recording is performed so that the playback picture will not distort at the edit point. A few frames recorded before the pause may be erased due to overlap of the new recording. This is not due to any defect of the unit.
- When the Record-Pause mode continues for longer than about 5 minutes, the Stop mode will be entered automatically.
- If the ● button cannot be engaged, check to see if the cassette safety tab has been removed. (See page 43).
- When the end of the tape is reached during recording, the tape is automatically rewound to the beginning and stops.
- The built-in tuner's automatic channel lock mechanism prevents the selected channel from being altered during recording. Therefore, if you wish to change the channel during recording, first engage the Record-Pause mode and then select a different channel.

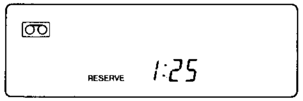
CONVENIENT FACILITIES RELATED TO RECORDING

REMAINING TAPE TIME INDICATION

The tape counter can be switched to display the remaining tape time.

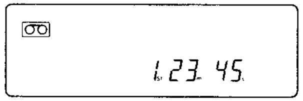
- Press the ANZEIGE button to obtain the remain (RESERVE) tape time indication in hours and minutes on the FDP.

Note:
- The indicated remaining time is approximate.



ELAPSED RECORDING TIME INDICATION

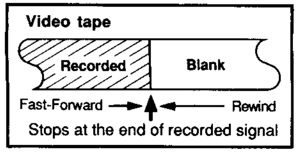
When you need to know the exact time of a recording, press the Z.-RÜCKST. button before starting recording or playback. The counter will be reset to "0St 00M 00s" and show the exact elapsed time as the tape runs.

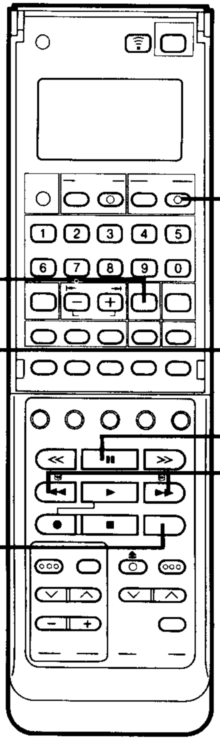


BLANK SEARCH

When you want to record a new programme on a partially recorded tape, use this function to automatically locate the end of a recorded section. Even when a fully recorded tape is used for re-recording new material, this system can be used to detect the end of the newly-recorded material.

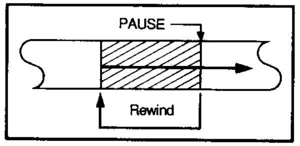
- Insert a cassette and press the SPRING./BLANK SUCHL. button.
- If a recorded signal is present, the recorder automatically enters the Fast Forward mode, and stops automatically around the end of that recorded section. Before starting recording, play back the tape to determine where to start a new recording.
- If the SPRING./BLANK SUCHL. button is pressed where no signal is recorded, the recorder automatically enters the Rewind mode, searches for the end of the preceding recorded segment, and stops.
- When the SPRING./BLANK SUCHL. button is pressed, the tape counter is automatically switched to the RESERVE mode and shows the remaining tape time in hours and minutes. To switch back to the realtime counter mode, press the ANZEIGE button.





RETAKE FUNCTION

While in the Record-Pause mode, pressing the ►► or ◄◄ button initiates normal-speed search in the corre-sponding direction. Releasing the button engages the Record-Pause mode. If you have recorded unnecessary material because of having engaged the Record-Pause mode too late, use this function to return to the position where you want the next recording to start. Then, simply press the ► button when you want to re-start recording.



Note:
- Rainbow noise may occur in the rewound and re-recorded section.

INSTANT TIMER RECORDING

24-HOUR TIMER

The 24-Hour Timer Recording feature allows unattended automatic starting and stopping of the recording of a single programme which starts within a 24-hour period.

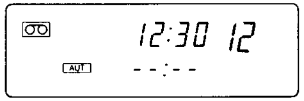
Preparation

1. Insert a cassette with its safety tab in place. The recorder turns on automatically.
2. Select the channel you wish to record from.

Setting the timer

1 Press the START button ⓲ to engage the 24-Hour Instant Timer Set mode. The following appears on the FDP with the current time.

FDP



- Each pressing delays the START time by 30 minutes
- For a more precise time setting, use the AUSWAHL and EINSTELLEN buttons.

2 After reaching the desired START time, press the AUFN./DA button the required number of times to set the desired length of recording time.
- For a more precise time setting, use the AUSWAHL and EINSTELLEN buttons.

3 After confirming the START time and recording length, press the BETRIEB button.
- "AUT" remains on the FDP and the 24-Hour Instant Timer Standby mode will automatically engaged.
- If the programme has not been correctly preset, the "AUT" indicator will blink for about 10 seconds when the BETRIEB button is pressed. Recheck the programmed data.

Notes:
- At each step of the timer setting procedure, if no data is entered within 10 seconds, the 24-Hour Timer Set mode is cancelled, and the current time is displayed.
- To cancel the 24-Hour Timer Set mode, press the LÖSCHEN button once or twice depending on the setting status.
- 24-Hour Timer Recording has priority over other timer programme settings; therefore, no other programmes, set for timer recording, will be recorded until 24-Hour Timer Recording has been executed.

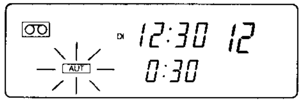
OFF-TIMER

- Start recording as described on page 47.

After you start recording, the recorder can be set to stop automatically after a certain period of time. Use this facility for starting a recording before you go to bed or leave home.

1 Press the AUFN./DA button while recording (or twice if in the Stop mode).
- The following indication will appear on the FDP, to show that the recorder is recording in the Instant Timer Recording mode and power will switch off after 30 minutes.

FDP



2 Each time the AUFN./DA button is pressed, recording time increases by 30 minutes to a maximum of 4 hours. If the AUFN./DA button is pressed again, the Normal Recording mode will be entered.
- For a more precise time setting, use the AUSWAHL and EINSTELLEN buttons to set to the exact time required (possible up to 4 hours and 59 minutes).

Notes:
- While recording is in progress, the displayed time counts down; when 0:00 is reached, the Record mode is released after 10 seconds and the power is switched off.
- If you want to stop recording after having started recording in the Instant Timer Record mode, press the STOP/CASSETTE button.
- If instant timer recording is engaged while the unit is in the Pause mode, the timer will count down normally, but recording will not begin until the WIEDERG. button is pressed.
- When the Instant Timer Record-Pause mode continues for longer than 5 minutes, the mode is released and power is switched off.
- If you want to check the elapsed time (Realtime Counter reading) on the FDP while performing Instant Timer Recording, press the ANZEIGE button to obtain the desired indication. After about 5 seconds, the indicator will return to the AUT mode and the remaining time indication will reappear automatically.

AUTOMATIC TIMER RECORDING

First of all, load a cassette (with safety tab in place); power will be switched on automatically.

Three ways to perform timer programming

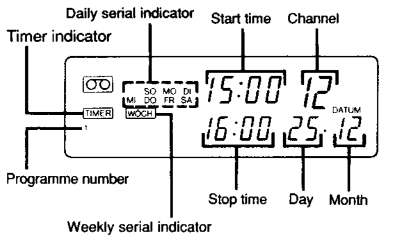
A. **Local programming:** Programme the timer using the recorder's controls while referring to the recorder's FDP.

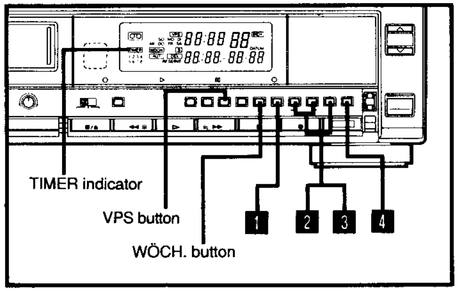
B. **On-screen remote programming:** Programme the timer using the remote control's keys while referring to the on-screen display.

C. **Independent remote programming:** Programme the remote control's memory using the remote control's keys while referring to its own LCD and then transfer the data to the recorder anytime at your convenience.

A. Local Programming

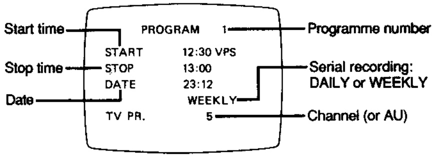
1 Press AUFZ. NR. button.
- The display will change to the Timer Set mode for programme number "1". To advance to programme numbers 2 — 8, press either EINSTELLEN button a required number of times.
- By pressing the remote control's BILDSCHIRM KONTROLLE button while the FDP is in the Timer Set mode, the on-screen display is also available.

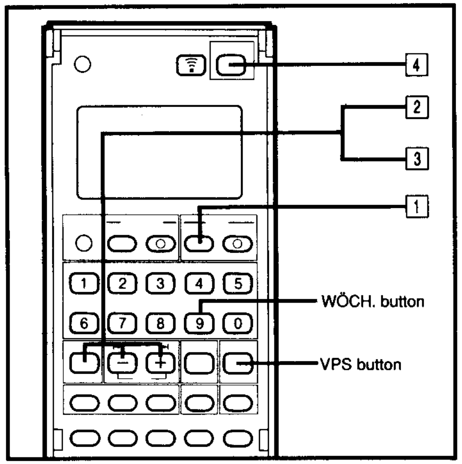




2 [2] Set the start time by using the AUSWAHL button and the EINSTELLEN buttons.
- Select the item to be set with the AUSWAHL button; the selected item will blink.
- Set the desired data with the EINSTELLEN –/+ buttons.
- To record a weekly serial, press the WÖCH. button once.
- To record a daily serial starting on a certain day, press WÖCH. twice.

[1] Press the VIDEO AUFZ. NR. button.
- The TV screen will change to the Timer Set mode for programme number "1" in one of the selected languages. (For language selection, see page 37.) To advance to programme numbers 2 — 8, press either EINSTELLEN button a required number of times.



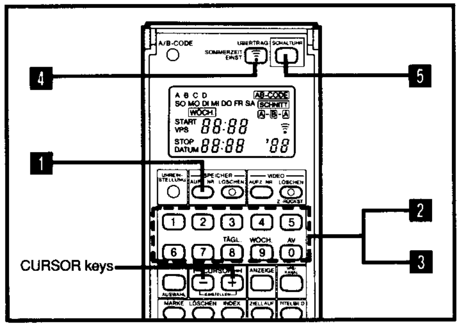


3 [3] Set the stop time, date and channel in succession in the same way as for setting the start time.
- To record a daily serial starting on the day of setting, there is no need to enter any date figure; simply advance to the next item.
- When not using the VPS recording system, before setting the channel, press the VPS button to make "VPS" disappear.
- For programming the timer to record an external source, while the channel position is blinking, press EINSTELLEN –/+ until the "AU" indicator appears in the channel display section.

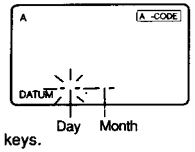
4 [4] After making sure that the cassette is loaded, press the SCHALTUHR button.
- The Timer Recording Standby mode will be engaged with the TIMER indicator and the preset programme number(s) illuminated and the power turned off.
- With no cassette loaded, the TIMER and "cassette loaded" indicators will continue blinking.
- A cassette whose safety tab has been removed will be ejected automatically.
- If a preset programme contains errors, the programme number will not illuminate. Recheck the programmed data.

C. Independent Remote Programming

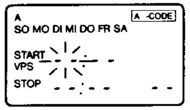
- The remote control incorporates 4 programme memories (A, B, C and D).
- The programmed data is held in memory even after it has been transferred to the recorder.



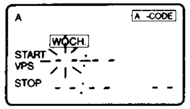
1 Press the SPEICHER AUFZ. NR. button.
- The LCD will be activated for programme memory "A".
- To advance to programmes B to D, press again.



2 Enter the date using the numeric keys.
- Invalid numbers will be rejected.
- To record a daily serial starting on the day of setting, press the CURSOR key "—⇥" without entering any date figure.
- To record a daily serial starting on a certain day, press [8] and enter the date.
- To record a weekly serial, press [9] and enter the date.

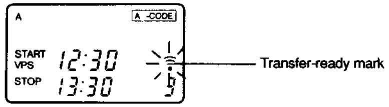


For daily serial setting



For weekly serial setting

3 Enter the start time, stop time and channel in succession.
- To key in a one-digit number of hours or minutes, first press [0]. Then press the relevant numeric key.
- When not using the VPS recording system, before setting the channel, press the VPS button to make "VPS" disappear.
- For programming the timer to record an external source, press the numeric key "0" while the channel is blinking; "AU" will appear on the LCD. When transferred in step **4**, "AU" will appear in the channel display section on the FDP.
- After the channel has been entered, the transfer-ready mark will appear and blink.



4 Direct the remote control to the recorder's Remote Sensor window and press the ÜBERTRAG button.
- The programmed data will be loaded in one of the recorder's memories (1—8), the vacant one of the smallest programme number.
- If all programme memories are full, the recorder's clock will blink and transmission will not take place.
- Call up the programme(s) to be cancelled by pressing the VIDEO AUFZ. NR. button, then press the VIDEO LÖSCHEN button to cancel it. Data transfer can now be made by pressing ÜBERTRAG again.

5 Press the SCHALTUHR button.
- Check to see that the TIMER indicator appears on the FDP.

How to use the CURSOR keys (⇤—/—⇥)
- If you press a wrong key and the blinking position has advanced, press ⇤— to return to the previous position for correction.
- Once all data have been programmed, you can reach any position for correction using ⇤— or —⇥. The blinking position is ready for re-entry.
- Pressing the SPEICHER AUFZ. NR. button on the remote control, engages the LCD in the transfer-ready mode in which the transfer-ready mark is blinking and data correction is not possible. For correction of data, press either cursor key to move to the position which requires correction.

Setting the date, start and stop times, and channel

- It is not possible to set the date, start and stop times unless the date and clock have previously been set.
- Enter the data while the digits are blinking.
- The stop time can be set within 24 hours of the start time.
- Non-applicable numbers (such as January 32, February 30 for dates, 24 or larger for hours, 60 or larger for minutes and 49 or larger for channels) will be rejected when keyed in.

Cancelling the preset data

- The preset programmes can be cancelled. First disengage the Timer Standby mode and engage the Timer Set mode for the programme number you wish to cancel and then press the LÖSCHEN button ㉑ or the VIDEO LÖSCHEN button. Or for the remote control's memory, press the SPEICHER LÖSCHEN button.
- An executed programme is automatically cleared.

Checking the programmed data

- Checking can be performed anytime, even after the SCHALTUHR button has already been engaged. To do this, press the AUFZ. NR. button ㉒ while in the Timer Standby mode. The programme number will blink on the FDP and you can check each programme by advancing programme numbers with the EINSTELLEN buttons ㉔. If re-programming is required, disengage the Timer Standby mode and use the regular programming method. Pressing the AUFZ. NR. button and/or EINSTELLEN buttons engages the FDP in the check mode in which no position blinks and data correction is not possible. For correction of data, press the AUSWAHL button ㉕ and move the cursor to a position which requires correction.

Timer recording operation

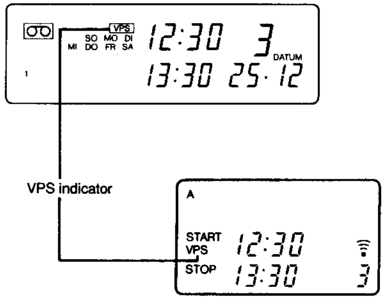
- When the preset start time is reached, recording starts.
- After timer recording, the power is switched off. If the end of the tape is reached during timer recording, the cassette is automatically ejected and then the power is switched off.

VPS RECORDING

In the VPS (Video Programme System) system, TV stations transmit different VPS codes for different TV programmes, which control the starting and stopping of the video recorder and have precedence over times preset in the timer for accurate recording of a particular programme from start to finish.

1. Press the AUFZ. NR. button ㉓ (or the VIDEO AUFZ. NR. button ⑧) or, for the remote control's memory, the SPEICHER AUFZ. NR. button ⑥.
2. Set the date, start time, stop time and channel in the same way as for timer programming.
3. Press the VPS/KANAL button ⑳ or ⑭.
   - All timer data will be converted to VPS codes and stored in memory.
4. Press the SCHALTUHR button ㉒ or ③.
   - The recorder will enter the VPS Standby mode at 20:00 on the day previous to the preset day and remain engaged until 3:59 on the following day, if the intended programme has not yet been broadcast.
   - When a VPS code corresponding to the intended TV programme is detected during the VPS Standby mode, recording will start. When the VPS code changes to another, recording will stop.
   - When an interruption code is detected during VPS recording, the VPS standby mode is engaged and recording restarts when the regular VPS code is restored.

Note:
- Operation at the end of VPS recording is the same as with ordinary timer recording.

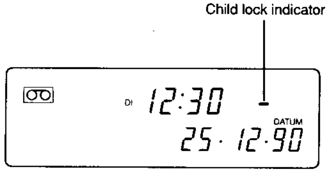


CHILD LOCK FUNCTION

The Child Lock function is for preventing accidental operation by young children, or other unwanted operation, such as playing back or recording over an important cassette you may have left inserted in the recorder. By engaging the Child Lock mode, the operation buttons on the recorder become ineffective, unless the remote control is used.

To engage the Child Lock mode

- Press the remote control's BETRIEB (VIDEO) button ㉛ to turn the recorder power off and keep this button pressed for about 2 seconds after the power LED indicator has gone off.
- The Child Lock indicator (-) will appear in the channel display section on the FDP to show that the recorder is now in the Child Lock mode.



To disengage the Child Lock mode

- When the remote control's BETRIEB (VIDEO) button is pressed to turn the recorder power on, this disengages the Child Lock mode. The recorder will turn on and the corresponding display will appear with the channel number appearing where the child lock indicator appeared before.
- Pressing the SCHALTUHR button during timer recording also disengages the Child Lock mode.

Notes:
- While in the Child Lock mode, the recorder can receive timer programmed data from the remote control.
- Timer recording is possible also, even while in the Child Lock mode. After timer recording has been performed, the Child Lock mode remains in effect.
- Even after automatic cassette ejection at tape end, following timer recording, the Child Lock mode remains in effect.
- It is possible to insert a cassette while in the Child Lock mode. After inserting a cassette, the Child Lock mode remains in effect.

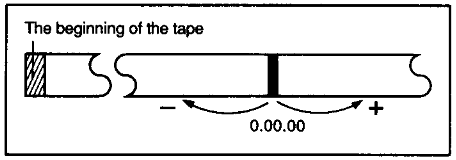
CONVENIENT TAPE ACCESS FUNCTION

REALTIME TAPE COUNTER

Unlike usual tape counters which show tape locations in numbers, this realtime tape counter shows tape time precisely in hours, minutes and seconds in all modes. The counter resets automatically when a cassette is inserted.

REALTIME SEARCH

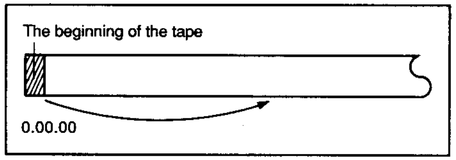
To locate any point on the tape a specified time away from the current position in either direction.



1. Press the remote control's ZIELLAUF button while in the Play, Still or Stop mode.
   - The FDP will show "ZIEL –St —M —S" if the recorder did not detect the leader tape when the cassette was loaded; it will show the current tape counter reading if the leader tape has been detected.
   - "ZIEL 0St 02M 34S" (for example) will appear if the recorder has already detected the leader tape, to show the current tape counter reading in terms of realtime from the tape's beginning.
2. Press either CURSOR (⇤/⇥) button or either KANAL (∨/∧) button to specify the direction.
3. Specify the time to the point to be located, by using the numeric keys.
   - Always key in a full number.
4. Press the ► or ■ button (❚❚ button, if either the Play or Still mode is already engaged).
   - Depending on the situation, search will take place in either the Shuttle Search mode or in the Fast Forward or Rewind mode. After the specified point is reached, playback starts automatically, the tape stops automatically or enters the Still mode, depending on the command.

REALTIME GO-TO

To locate any point on the tape a specified time away from the beginning of the tape.



The procedure is the same as for the Realtime Search except step 2. Specifying the direction is not necessary.

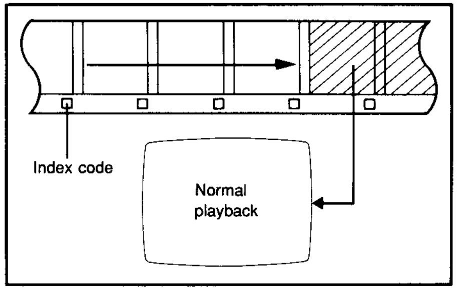
Notes:
- Each step in the operation procedure must be followed by the next within 60 seconds, otherwise the Go-To or Search mode will be cancelled.
- Use of the other control buttons while in the Go-To or Search mode cancels that mode.
- If the specified time exceeds the tape length, the tape fast forwards to the end and then rewinds to the beginning and stops or enters the Play mode.

COUNTER MEMORY FUNCTION

1. Press the Z.-RÜCKST. button at a point which you may wish to locate later.
   - The counter will read "0St 00M 00S".
2. Press the Z.-SPEICHER button. [S] will appear on the FDP.
3. Press the ◄◄ (or ►►) button when you need to return to the designated point.
   - The tape will rewind (or fast forward) and stop at about "0St 00M 00S" automatically.
   - The Counter Memory function can also be used in conjunction with the Memory Play function (page 45).

INDEX SEARCH

The Index Search function gives you automatic access to the beginning of individual recordings on the cassette tape. An index code is automatically placed on the tape's control track each time a recording is begun. You can access any one of up to 99 of these indexed segments in either the forward or reverse direction.



1. Press the INDEX button while in the Play or Stop mode.
   - The channel display of the FDP will change to the Index Search mode and "INDX" will light.
2. Specify the index number (1 — 99) using the numeric keys within 10 seconds.
   - The specified number will appear on the FDP.
3. Press either the ◄◄ or ►► button.
   - The tape will move and the index numbers count down to 0, where normal playback will start.
   - If the INDEX button was pressed in the Play mode, the screen shows search pictures; if the button was pressed in the Stop mode, the index codes are detected in the Rewind or Fast-Forward mode.

Notes:

- To cancel the Index Search mode before completion, press the ► or ■ button.
- If the end of the tape is reached while still in the Index Search mode, the mode is cancelled and the tape rewound.

MANUAL INDEX MARK/ERASE

Index codes are automatically placed at the beginning of recordings which are started from the Stop or Timer Standby mode. You can use the MARKE button to add extra codes, and the LÖSCHEN button to erase codes. In neither case is there any effect on the audio or video recordings on the tape.

Erase

In the Play or Still mode, press LÖSCHEN button to erase the next index code. The tape is automatically fast-forwarded and when an index code is detected, it will be erased automatically. "INDX" on the FDP remains lit during the searching process and blinks during the erasing process.

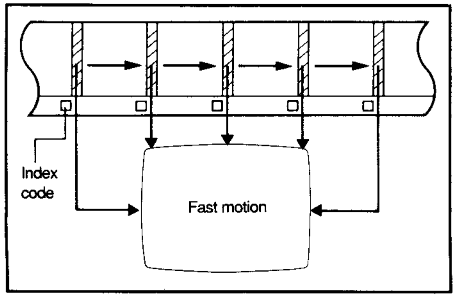
Mark

In the Play or Record mode, press MARKE button once to put an index code onto the tape. "INDX" appears on the FDP and blinks during the marking process.

Notes:

- Index codes cannot be added or erased on a tape with its safety tab removed.
- The Erase mode is cancelled either after one index code has been erased or the Play mode is cancelled.

INTRO SEARCH



The Intro Search function lets you visually check the contents of each recording by playing back in fast motion a short segment of a programme each time an index code is detected.

1. Press the TITELBILD button while in the Play or Stop mode.
   - The INDX indicator on the FDP will light.
2. Press the ◄◄ or ►► button within 2 seconds.
   - The Intro Search will start in the corresponding direction.
   - Each time an index code is detected, the corresponding part is played back at the search speed (9 times normal) for about 5 seconds.
3. When you find the section you want to view, simply press the ► button.
   - Normal playback will start.

RECORDING FROM AN EXTERNAL SOURCE

By connecting an external video source (such as a 2nd video recorder, VideoMovie camera-recorder, etc.) to the AUDIO/VIDEO socket, tape-to-tape transfer is possible.

- For connection of these units an appropriate cable is necessary.

Connection

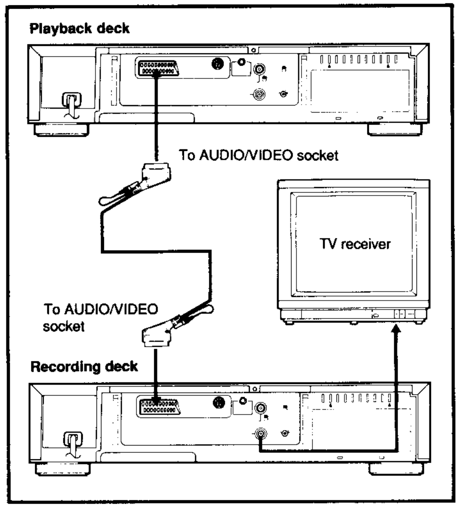
1. Connect the AUDIO/VIDEO socket to the appropriate audio/video output of the 2nd video recorder.
2. Connect a TV receiver to the recorder to monitor the picture while recording.

Operation

1. Turn the power on for all connected equipment.
2. Tune the TV receiver to your video channel.
3. Load a cassette with its safety tab in place.
4. Press either KANAL button ❻or the numeric key 0/AV ⑩ to obtain "AU" in the channel display section on the FDP.
5. Press the AUFN./DA button ⓭and the PAUSE/STANDB. button ⓲ to put the recorder in the Record-Pause mode.
6. Play back a tape on the source equipment to determine the segment to be recorded.
7. Press the WIEDERG. button ❿ to start recording.
8. To stop recording temporarily, press the PAUSE/STANDB. button.
9. To end recording, press the STOP/CASSETTE button ❽.

Note:

- For the operation of the source equipment, refer to the instruction manual of the relevant machine.

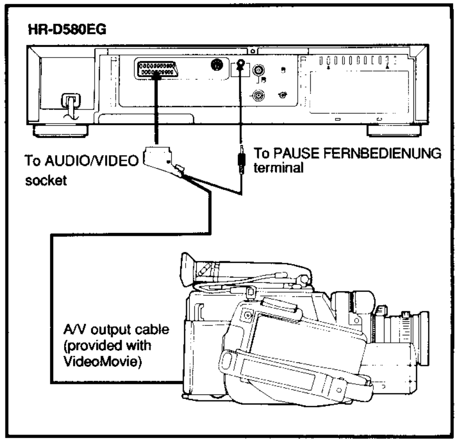


EDITING TO ANOTHER VIDEO RECORDER

This video recorder can also be used as the source player when editing tapes. This video recorder's PAUSE FERNBEDIENUNG terminal is designed to accept a preroll command when used as a source player with a video deck which is preroll-capable and equipped with a Pause Control Output terminal. This combination makes possible synchronized preroll editing for high-quality editing results.

EDITING FROM A VIDEOMOVIE

- Connect the VideoMovie's AV OUT connector to the video recorder's AUDIO/VIDEO socket.
- Connect the mini-plug of the AV output cable to the remote PAUSE terminal of the video recorder.
- When the recorder is connected to a VideoMovie which incorporates a Master Edit Control system, you can control the recorder with the VideoMovie's controls for making edits free of transition-point gaps and distortion. Refer to the VideoMovie's instruction manual for detailed operating procedures for editing.
- With this connection, you can also use the VideoMovie as a video camera for direct recording onto the recorder's tape. Put the recorder in the Record-Pause mode and operate the VideoMovie's start/stop trigger to start and pause recording. (For direct recording with a separate video camera, a camera adapter is necessary.)


HR-D580EG
To AUDIO/VIDEO socket
To PAUSE FERNBEDIENUNG terminal
A/V output cable (provided with VideoMovie)

DUET EDITING

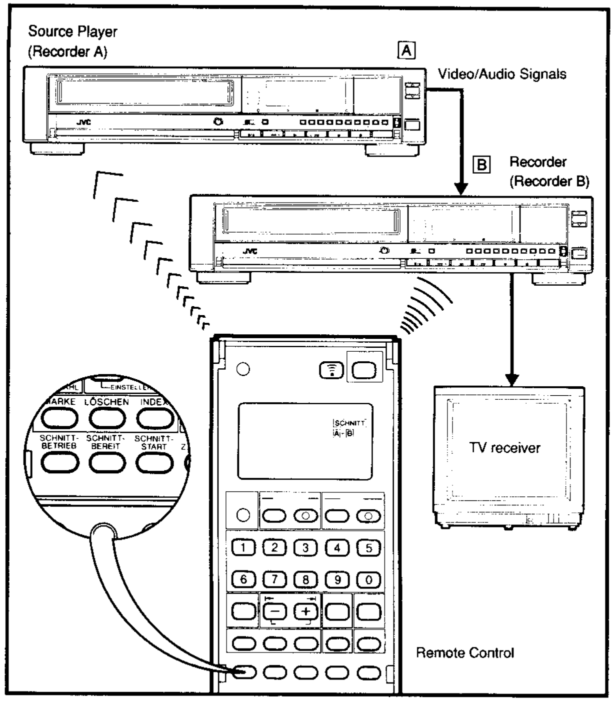
Designed specifically to simplify editing operations, the Duet Editing function delivers separate commands to two recorders simultaneously via a single remote control, taking advantage of the A/B code system. (JVC dedicated models only)

Preparations

- Connect two recorders as described in "RECORDING FROM AN EXTERNAL SOURCE" on the previous page.
- Set one recorder to respond to A code signals, the other, to respond to B code signals. (See page 37.)
- Place the two recorders side by side.

Notes:

- JVC video recorders with infrared remote control units which are not equipped with an A/B code select switch are designed to receive A code signals. Therefore, Duet Editing is possible with JVC decks if the HR-D580EG is set to respond to B code signals.
- It is not possible to perform Duet Editing unless the remote control's clock has been previously set.



OPERATION

Remote Control	Recorder A (Source player)	Recorder B (Recorder)
	Load a recorded tape.	Load a blank tape.
1. Press SCHNITT-BETRIEB "SCHNITT A → B" appears on LCD.		
2. Press SCHNITT-BEREIT.	Enters STILL mode.	Enters RECORD-PAUSE mode.
3. Search for an edit-in point on the source tape. Press ❚❚.	Functions as commanded. (In this state, only recorder A responds to the remote control's commands.)	Remains in RECORD-PAUSE mode.
4. Press SCHNITT-START.	Enters PLAY mode.	Enters RECORD mode.
5. Press ❚❚.	Enters STILL mode.	Enters RECORD-PAUSE mode.
6. Repeat steps 3, 4 and 5 to continue editing.		

Notes:

- You can use Recorder B (the recorder set to respond to B code signals) as a source player and Recorder A as a recorder. In this case, press the A/B-CODE button after step 1 to obtain "SCHNITT B → A" indication.
- To cancel the Duet Edit mode and return to normal remote control functions, press the SCHNITT-BETRIEB button so that the SCHNITT indication disappears.
- When the START button is pressed, the recorder takes a few seconds before actual editing starts due to the automatic backspace editing system. At the same time the START button is pressed, the player starts playback from the specified edit-in point. Therefore, it is recommended that you specify a point slightly before the intended edit-in point in step 3 for more accurate editing. This also ensures that the picture of the resulting edit will be more stable.

IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first ...

POWER AND TAPE TRANSPORT PROBLEMS

Symptoms	Check points
No power is applied to the recorder.	● Is the power cord disconnected? — Connect it.
Clock is functioning properly, but the recorder cannot be powered.	● Is the TIMER indicator lit on the FDP? — Press SCHALTUHR to disengage the Timer Recording Standby mode.
Tape does not run during recording.	● Is the PAUSE/STANDB. button engaged? — Press the WIEDERG. button.
Tape stops in the Rewind or Fast-Forward mode.	● Is the Z.-SPEICHER switch set so that "S" appears on the FDP? — Press to make "S" disappear.
Tape will not rewind or fast forward.	● Is the tape already fully rewound or fast forwarded? — Check the cassette.

RECORDING PROBLEMS

Symptoms	Check points
Recording cannot be started.	● Is a cassette loaded? ● Is the safety tab on the cassette removed? — Reseal the slot with cellophane tape.
Camera recording is not possible.	● Are the camera and the camera adapter correctly connected? ● Is the power switch of the camera adapter set to ON? ● Does the channel display indicate "AU"? — Press "0/AV".
Timer recording is not possible.	● Have you set the clock correctly and programmed the timer correctly? — Check once again. ● Is the TIMER indicator lit on the FDP? — Press the SCHALTUHR button.

PLAYBACK PROBLEMS

Symptoms	Check points
Playback picture does not appear while the tape is running	● Is the TV receiver's channel selector set to the correct video channel? — Set it to the RF converter channel. (See page 38.) ● If you are using AV connection, is the television engaged in the AV mode? — Operate the television's mode.
Playback is repeated.	● Is the WIEDERHOLUNG switch set to either "KOMPL." or "INDEX"? — Set it to "AUS".
Noise appears during playback.	● Is the automatic tracking mode engaged? — Engage the manual tracking mode. (See page 44.)
Playback picture is blurred or interrupted while TV broadcasts are clear.	● Video heads may be dirty. — Head cleaning is necessary. Consult your JVC dealer.

OTHERS

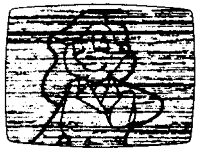
Symptoms	Check points
Whistling or howling is heard from TV.	• Move camera or microphone away from TV or reduce TV sound volume.
Some channels are skipped over when selecting a channel.	• Those channels are preset to be skipped over. If you need them, restore them. (See page 42.)
Channel cannot be switched.	• Is recording in progress? — Press PAUSE/STANDB., select a desired channel and press WIEDERG.
The recorder cannot be operated with the remote control.	• Batteries are discharged. — Replace with new one. • Is the A/B-CODE indicator showing the proper code for the recorder being operated? — Press the A/B-CODE button to switch the remote control to the correct setting.
Index Search does not function properly.	• Adjacent index codes may be too close to each other. — Erase some index codes and mark new ones, if necessary, with sufficient distance between two index codes.

This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

HEAD CLEANING

- Picture playback may become blurred or interrupted while the TV programme received is clear. This does not mean that the recorded programme has been erased.
- Dirt accumulated on the video heads after long periods of use causes such problems. In this case, head cleaning requiring highly technical care is necessary.

For head cleaning, consult the nearest JVC dealer.



SPECIFICATIONS

GENERAL

Power requirement : AC 220 V∿, 50/60 Hz
Power consumption : 27 W
Temperature : 5°C to 40°C (Operating)
: −20°C to 60°C (Storage)
Operating position : Horizontal only
Dimensions (WxHxD) : 435 x 94 x 334 mm
Weight : 5.3 kg
Format : VHS PAL standard
Tape width : 12.65 mm
Tape speed : 23.39 mm/sec
Maximum recording time : 240 min. with E-240 video cassette

VIDEO

Signal system : PAL colour and CCIR monochrome signals, 625 lines/50 fields
Recording system : Rotary, two-head helical scan system with a slant double-azimuth combination video head
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output : 1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio : 43 dB (Rohde & Schwarz noise meter) with BILDSCHÄRFE control at centre position
Horizontal resolution : 250 lines with BILDSCHÄRFE control at centre position

AUDIO

Recording system : Longitudinal track
Input : −3.8 dBs, (CENELEC standard), more than 50 k-ohms, unbalanced
Output : −3.8 dBs, (CENELEC standard), less than 1 k-ohm, unbalanced (100 k-ohms, load)
Frequency range : 70 Hz to 10,000 Hz

TUNER

Tuning system : Frequency synthesized tuner
TV channel storage capacity : 48 positions (+ AUX position "AU")
Channel coverage : VHF 47 — 111 MHz
111 — 300 MHz
UHF 470 — 862 MHz
Aerial output : UHF channel 36
(adjustable 32 — 40)

TIMER

Clock reference : Quartz-crystal
Programme capacity : 1-year/8-programme timer
Memory back-up time : Minimum 3 min.

ACCESSORIES

Provided accessories : Aerial cable,
Infrared remote control unit,
"R6" battery x 2
Optional accessories : VPV adapter VU-V120E
VPT adapter VU-V140E

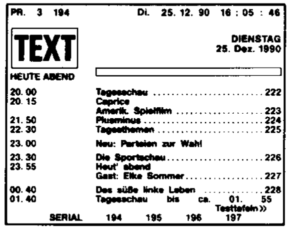
Design and specifications subject to change without notice.

TELETEXT COMPATIBILITY

Teletext services are becoming popular and a vast number of teletext pages are now available for a variety of information. This recorder is ready to take advantage of these services, not only for simple viewing but also for programming the recorder's built-in timer in an extremely easy way. All you need to do is connect the optional VPT or VPV adapter to the rear of the recorder. Then the recorder's remote control exhibits its full capability with all the dual or triple-function control keys working as intended. The following information shows examples of using the optional VPT adapter.

TELETEXT

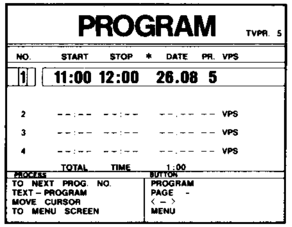
- View broadcast teletext pages.
- Several page access modes are available for quick and convenient viewing.
- Programme the timer using TV schedule pages.



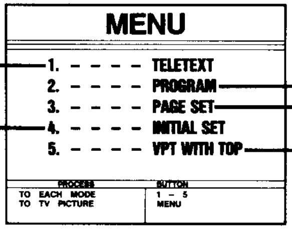
```
PR.  3  194                 Di.  25. 12. 90  16 : 05 : 46

TEXT                                        DIENSTAG
                                        25. Dez. 1990
HEUTE ABEND

20. 00         Tagesschau ........................222
20. 15         Caprice
               Amerik. Spielfilm .................223
21. 50         Plusminus .........................224
22. 30         Tagesthemen .......................225

23. 00         Neu: Parteien zur Wahl

23. 30         Die Sportschau ....................226
23. 55         Heut' abend
               Gast: Elke Sommer .................227

00. 40         Des süße linke Leben ..............228
01. 40         Tagesschau   bis   ca.   01.   55
                                       Testtafeln»
          SERIAL    194     195     196     197
```

PROGRAM

- Check the timer recording data on the colour display.
- Programme the timer manually with 10-key input.



```
                PROGRAM             TVPR. 5
 NO.      START     STOP   *   DATE   PR.  VPS
 [1]   11:00 12:00   26.08  5

  2     --:--   --:--     --.--  --  VPS
  3     --:--   --:--     --.--  --  VPS
  4     --:--   --:--     --.--  --  VPS
        TOTAL    TIME       1:00
 PROCESS                   BUTTON
 TO NEXT PROG. NO.         PROGRAM
 TEXT - PROGRAM            PAGE  -
 MOVE CURSOR               < - >
 TO MENU SCREEN            MENU
```



```
              MENU
    1. - - - - TELETEXT
    2. - - - - PROGRAM
    3. - - - - PAGE SET
    4. - - - - INITIAL SET
    5. - - - - VPT WITH TOP
 PROCESS                BUTTON
 TO EACH MODE           1 - 5
 TO TV PICTURE          MENU
```

PAGE SET

- Preset teletext pages so that you can quickly access your favourite or frequently-referred-to pages.
- Four pages can be preset for each of the keys, 0 to 9, totalling 40 pages.

INITIAL SET

LANGUAGE

- Select one of four languages (English, German, Italian or Swedish) for on-screen messages.

CLOCK ADJUST

- Set the VCR's clock manually with 10-key input.
- Automatic clock setting by reading time information from teletext pages.

VPT WITH TOP

- TOP automatic teletext timer programming.
  - * "5. – – – – VPT WITH TOP" appears only when the VCR's tuner is tuned to a station which is transmitting TOP broadcasts.

SECTION 1
DISASSEMBLY AND MECHANISM ADJUSTMENTS

1.1 DISASSEMBLY

1.1.1 Top cover

1. Refer to Fig. 1-1-1 and set for the EJECT (Stop) mode and disconnect VCR from AC power.
2. Take out 4 screws Ⓐ and 1 screw Ⓑ. To remove the top cover, slide it in the direction of the arrow and lift it away.

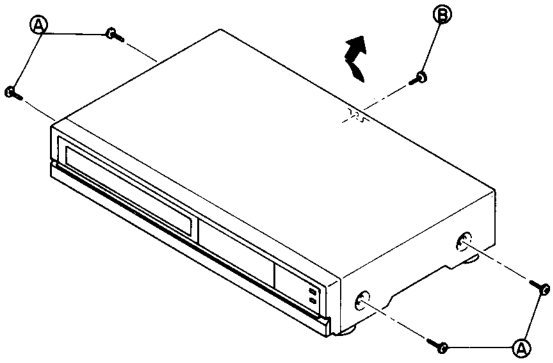


Fig. 1-1-1

1.1.2 Front panel assembly

1. Remove the top cover.
2. Carefully disengage 3 tabs Ⓒ of the front panel assembly from the upper side of the chassis.
3. Refer to Fig. 1-1-2 and pull the front panel assembly forward you to disengage 3 tabs Ⓓ of the front panel assembly from the bottom side of the chassis, then remove the front panel assembly.

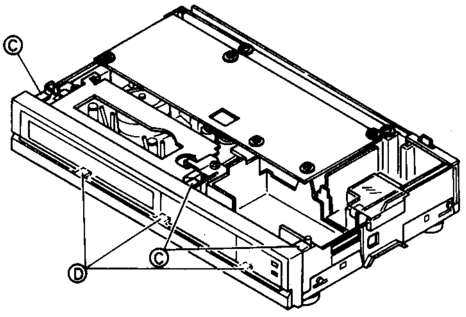


Fig. 1-1-2

1.1.3 Bottom cover

1. Remove the top cover.
2. Refer to Fig. 1-1-3 and take out 4 screws Ⓔ and 2 screws Ⓕ from the bottom of the chassis.
3. Disengage the bottom cover from 5 claws Ⓖ on the bottom of the chassis.

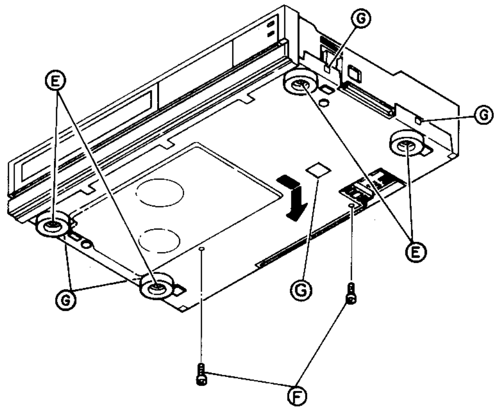


Fig. 1-1-3

1.1.4 Main board assembly

1. Remove the top cover.
2. Refer to Fig. 1-1-4 and take out 5 screws Ⓗ and 1 screw Ⓘ from main board assembly.

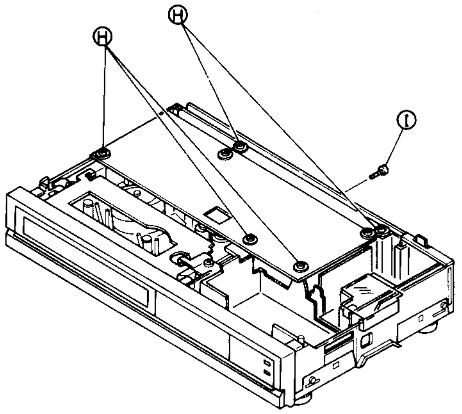


Fig. 1-1-4

1.1.5 Cassette housing

1. Remove the top cover and main board assembly.
2. Refer to Figs. 1-1-5 and 1-1-6.
   Take out 4 screws Ⓙ that secure the cassette housing. Disengage 3 tabs Ⓚ of the front panel and pull the front panel forward where it does not interfere with removing the cassette housing.
   Take out 2 screws Ⓟ and remove the drum shield cover.
   Remove the cassette housing in the upward direction.

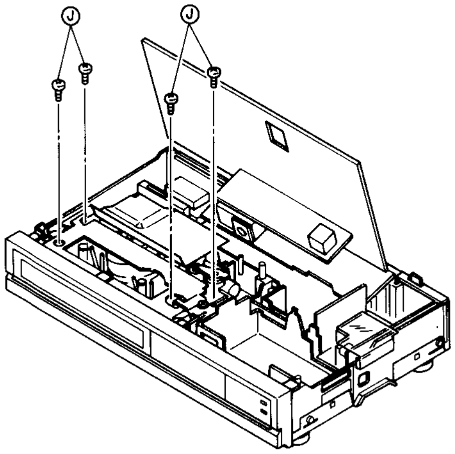


Fig. 1-1-5

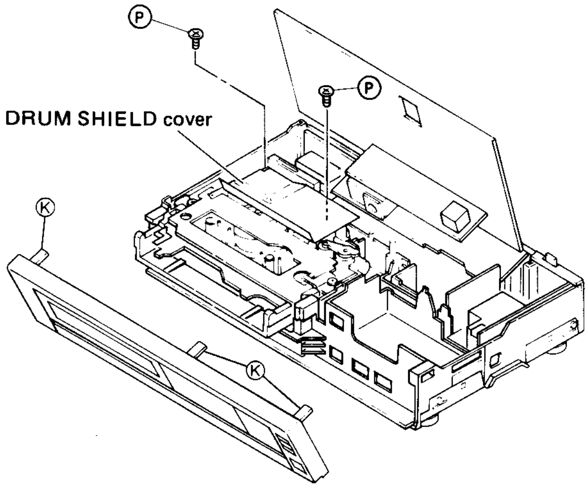

Ⓟ
Ⓟ
DRUM SHIELD cover
Ⓚ
Ⓚ

Fig. 1-1-6

1.1.6 Cassette housing installation

1. On the main deck, observe the positional relationships of the parts indicated in Fig. 1-1-7.
   If necessary, turn the loading motor by hand to obtain these positions.

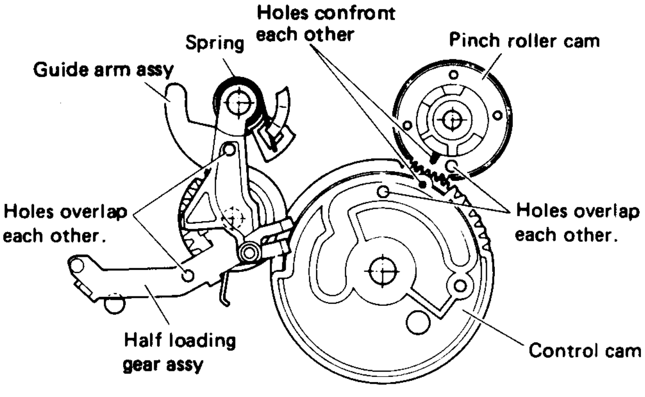

Holes confront each other
Spring
Pinch roller cam
Guide arm assy
Holes overlap each other.
Holes overlap each other.
Half loading gear assy
Control cam

Fig. 1-1-7

2. Refer to Fig. 1-1-8 and confirm that the clutch is engaged.
   If necessary, press the lever indicated by the arrow to where the clutch is locked.

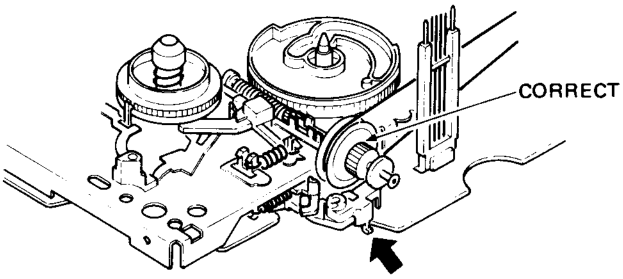


Fig. 1-1-8

3. Check that the cassette housing is in the eject state (internal holder of the cassette housing is locked in raised position).
   Set the cassette housing into place and secure with 4 screws.
4. Install the front panel as shown in Fig. 1-1-9 and re-engage the tabs. Supply power and use a spare cassette to check for normal loading and eject operations.

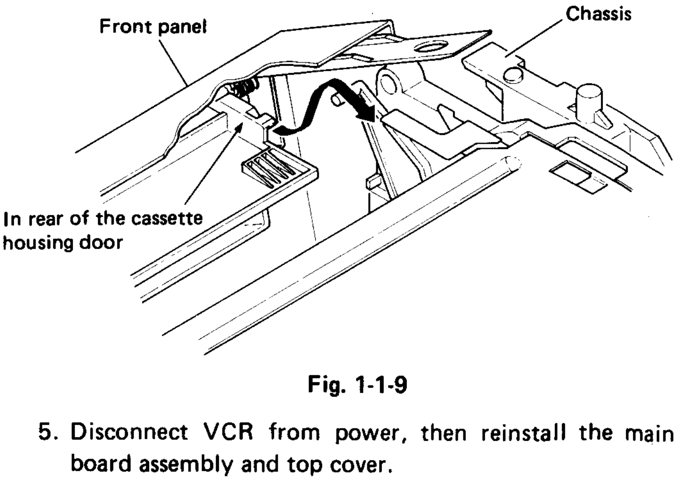

Front panel
Chassis
In rear of the cassette housing door

Fig. 1-1-9

5. Disconnect VCR from power, then reinstall the main board assembly and top cover.

1.1.7 Cassette housing door

1. Remove the top cover and front panel assembly.
2. Take out one screw Ⓛ of the front panel assembly.
3. Refer to Fig. 1-1-10 and use care regarding the torsion spring, then pull out the left end of the cassette housing door to move it.

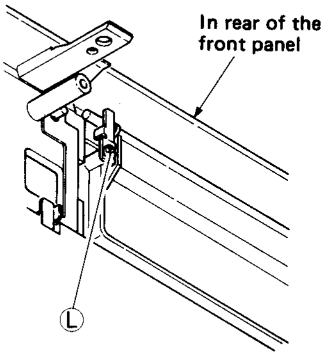


Fig. 1-1-10

1.1.8 Main-deck

1. Remove the top cover, front panel assembly and main board assembly.
2. Refer to Fig. 1-1-11 and take out 3 screws Ⓜ from the main-deck assembly.
3. Remove the main-deck assembly in the upward direction and disconnect a connector of CN601 from the Main board, connectors of CN1, CN2 from the Pre/Rec board, connectors of CN1, CN2 from the A/C head board, a connector of CN1 from the Loading MDA board and a connector of CN1 from the Drum MDA board.

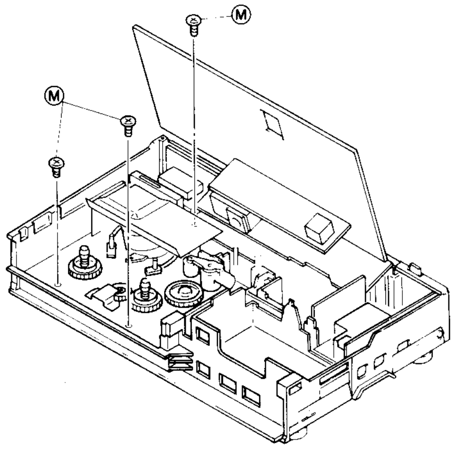


Fig. 1-1-11

1.2 MECHANISM ADJUSTMENTS

1.2.1 Precautions

1. Disconnect mainframe from AC power before soldering.
2. Avoid imparting stress to wires when disengaging connectors.
3. Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4. Use care not to damage tabs, claws, etc. during repairs.
5. Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6. When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.

1.2.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1. Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2. Connect pins 2 and 3 of Main board connector CN601.
3. Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

1.2.3 Manually removing cassette tape

In event of electrical system failure that prevents the tape from being unloaded, the tape can be removed manually by the following procedure. Refer to Figs. 1-3-1, 1-3-2 and 1-3-3.

1. Disconnect power cord from AC outlet.
2. Turn the loading motor by hand so that the control cam rotates clockwise. This retracts the pole base assembly to the unloading position.
3. Continue turning to where the guide arm and half loading gear assemblies shift to beneath the cassette.
4. Turn the clutch assembly (capstan motot) at the rear of the deck to absorb slack tape within the cassette.
5. Again turn the loading motor in the same direction to raise the cassette and remove it.

1.2.4 Test equipment

The following special tools and fixtures are required for mechanism adjustment.

1. Alignment tape : MH-2
   Stairstep signal is employed for interchangeability checks and adjustments.
2. Torque gauge : PUJ48075-2
   Measures tape take-up torque.
3. Back tension cassette gauge : PUJ48076-2
   Measures tape tension at the supply side.
4. A/C head positioning tool : PUJ47351-2
   Shifts the head base for adjusting the control head position.
5. Roller driver : PTU94002
   Turns the guide roller for adjusting FM linearity.

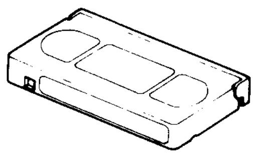
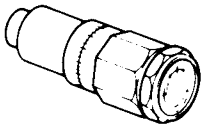
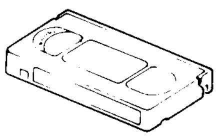
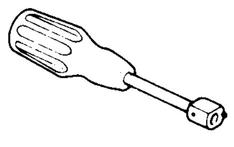
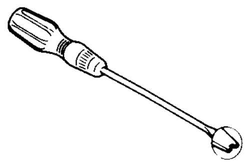
Alignment tapes 1	Torque gauge 2	Back tension cassette gauge 3	A/C head positioning tool 4	Roller driver 5
				

Fig. 1-2-4 Test equipment

1.3 MAIN MECHANISM PARTS

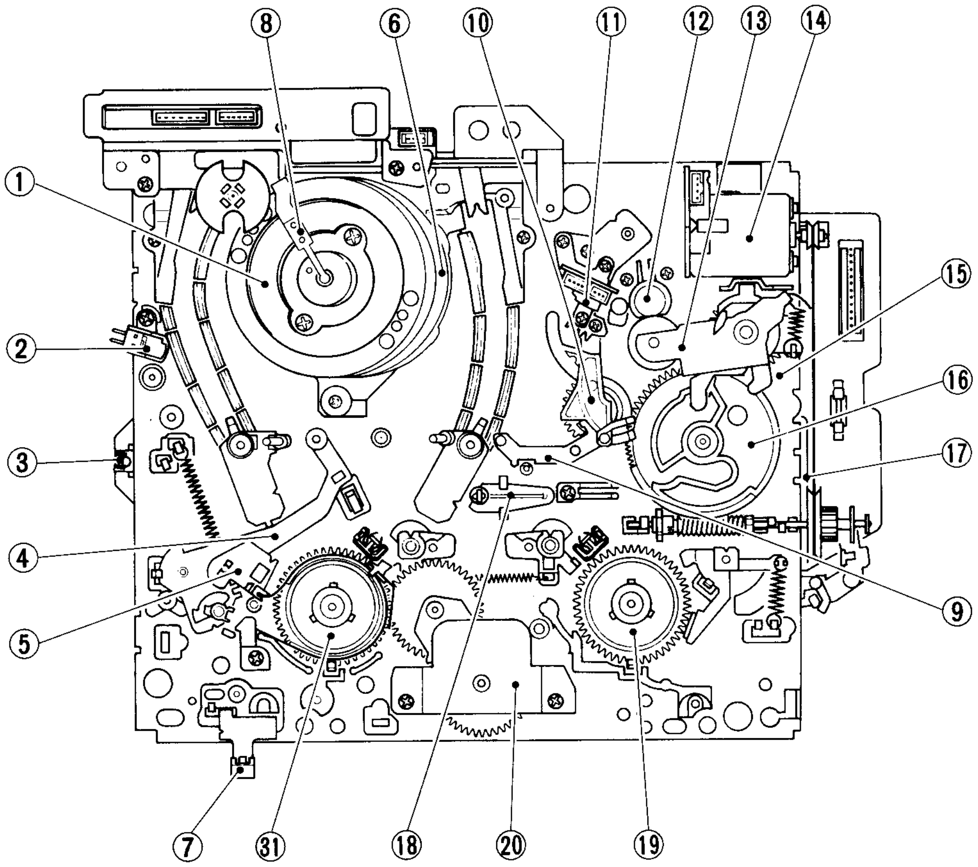


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Fig. 1-3-1 Top view of main-deck

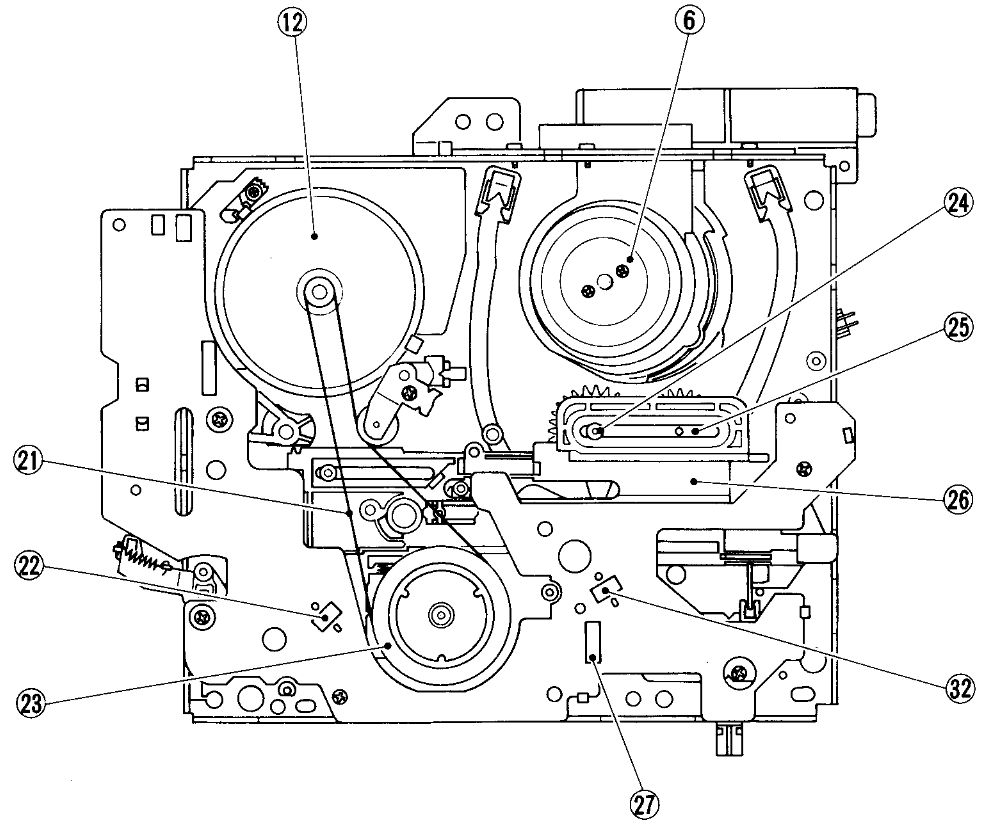

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Fig. 1-3-2 Bottom view of main-deck

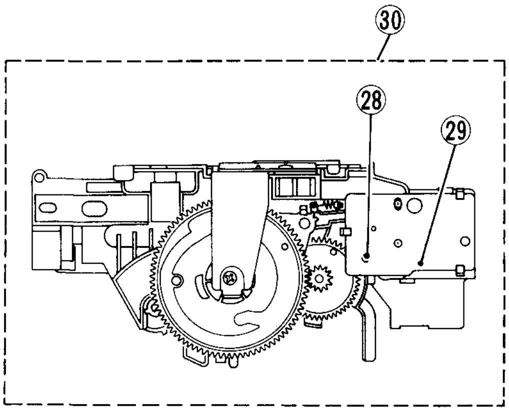


Fig. 1-3-3 Side view of cassette housing

A. Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

B. Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).

For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.

Before oiling, clean with alcohol.
Apply one or two drops of oil. Avoid excess oil.

1. Table 1-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 1-1

2. Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: *Stir grease that has been stored for an extended period.*

C. Main mechanical parts

See Figs. 1-3-1, 1-3-2 and 1-3-3.

No.	Symbol	Parts Name	See Section
1	M32A	Upper drum assy	
2	M44	Full erase head	
3	51Q1	End sensor	
4	M41	Tension arm assy	1.5.4
5	M42	Tension band assy	1.5.4
6	M32C	Lower drum motor assy	1.5.2
7	M461	REC safety switch (S2)	
8	M32D	Brush assy	
9	M449	Half loading gear assy	1.5.5
10	M447	Guide arm assy	1.5.5
11	M48	A/C head	1.5.3
12	M422	Capstan motor	
13	M442	Pinch roller arm assy	
14	M434	Loading motor assy	
15	M446	Pinch roller cam	1.5.5
16	M438	Control cam	1.5.5
17	M437	Loading belt	
18	M460	LED holder (D1)	
19	M430	Reel disk (take-up)	
20	M424	Idler gear unit	
21	M429	Timing belt	
22	51PHS1	Take up reel sensor (PS1)	
23	M426	Clutch unit	1.5.6
24	M433	Take up loading arm assy	1.5.7
25	M432	Supply loading arm assy	1.5.7
26	M439	Plate assy	1.5.7
27	M462	Slide switch (S3)	
28	56PHS3	Cassette sensor (PHS3)	
29	56Q2	Start sensor (Q2)	
30	M36	Cassette housing assy	
31	M470	Reel disk (supply)	
32	51PHS2	Supply reel sensor (PS2)	

- Symbol interpretation example

M32A
└ Ref. No.
└ Exploded view symbol

56 Q2
└ Ref. No.
└ Board No.

1.4 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced at when required.

1.4.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.

Also note that rubber parts may deform in time, even if the set is not used.

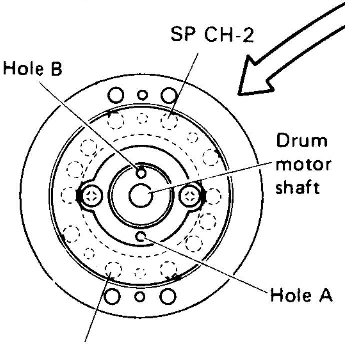
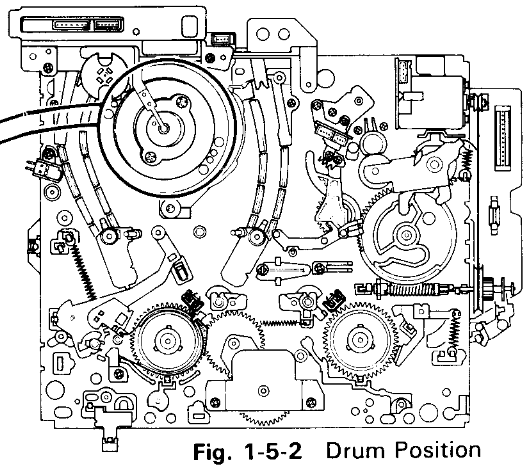
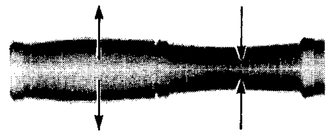
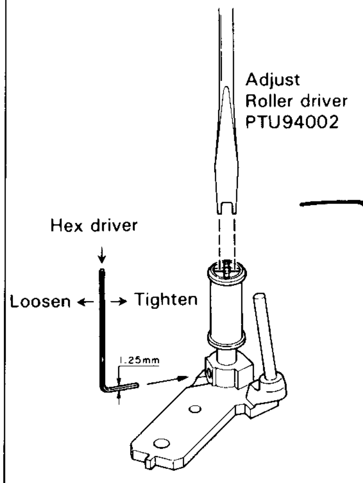
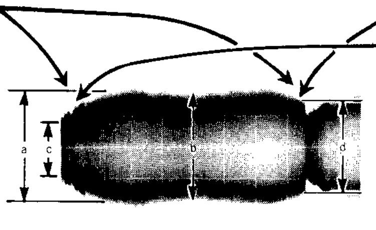
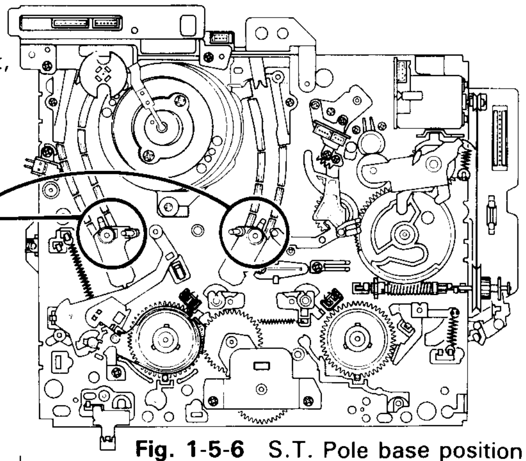
System	No.	Parts Name	Symbol No.	Periodic servicing schedule (operation hours)								
				250	500	750	1000	1250	1500	1750	2000	Overhaul
Tape Transport	1	Upper drum	M32A	★	★	☆	○	○	○	○	○	●
	11	A/C head	M48	★	★	★	○	○	○	○	○	●
	13	Pinch roller	M442	★	★	★	○	○	○	○	○	●
	2	Full erase head	M44	★	★	★	○	○	○	○	○	●
	4	Tension arm	M41									●
	6	Lower drum	M32C				○	○	○	○	○	●
	12	Capstan (shaft)	M422	★	★	★	★	★	★	★	★	●
	9	Half loading gear	M449									●
	10	Guide arm	M447									●
Drive	12	Capstan motor	M422				○	○	○	○	○	●
	17	Loading Belt	M437				○	○	○	○	○	●
	21	Reel Belt	M424				○	○	○	○	○	●
	19	Take-up reel disk	M430				○	○	○	○	○	●
	31	Supply reel disk	M470				○	○	○	○	○	●
	23	Clutch assy	M426								○	●
	14	Loading motor	M434				○	○	○	○	○	●
		Worm clutch assy	M436								△	●
	26	Plate assy	M439								△	●
Others	5	Tension band	M42				○				○	●
	8	Brush	M32D				○				○	●

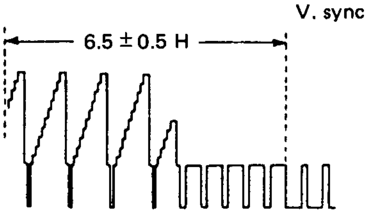
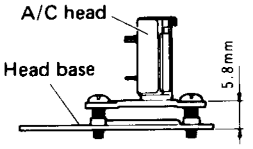
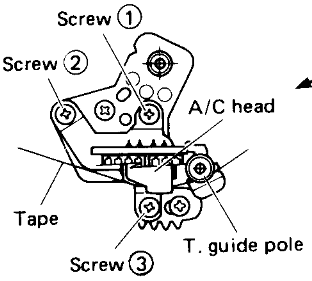
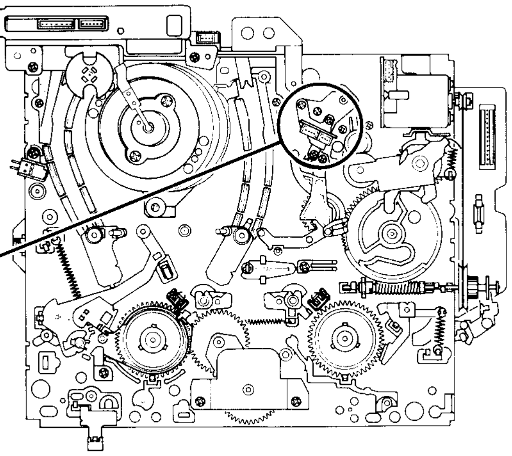
★ : Cleaning
☆ : Cleaning (or Replacement if necessary)
△ : Lubrication
No: Refer to Main mechanical parts

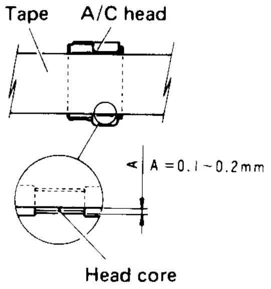
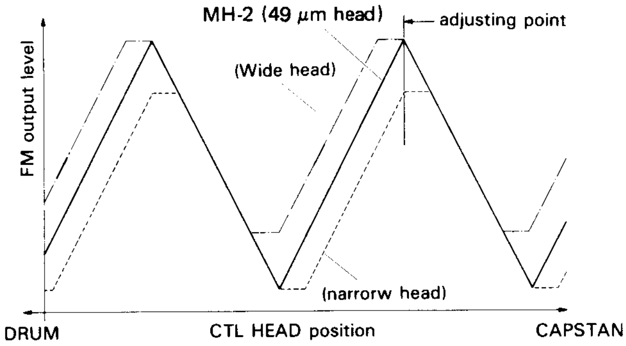
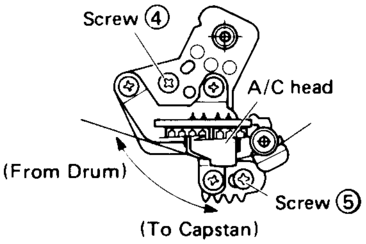
▲ : Lubrication (or Replacement if necessary)
● : Replacement
○ : Inspection or Replacement if necessary

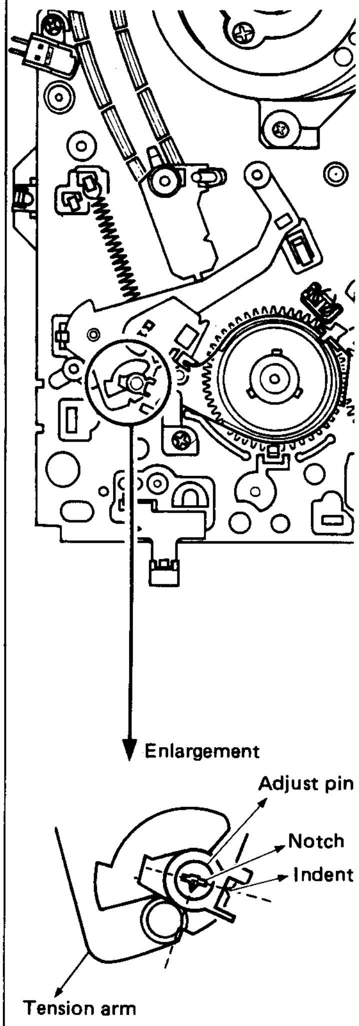
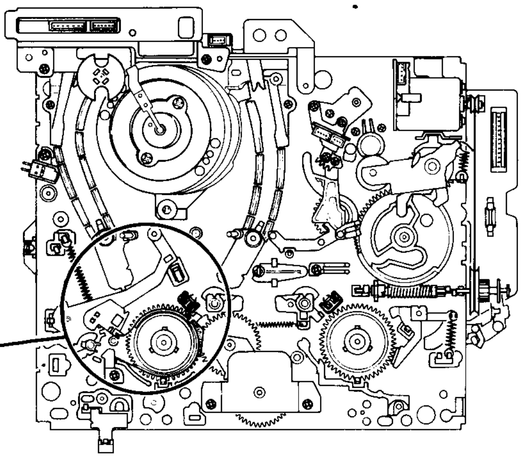
Table 1-4-1 Approximate maintenance schedule

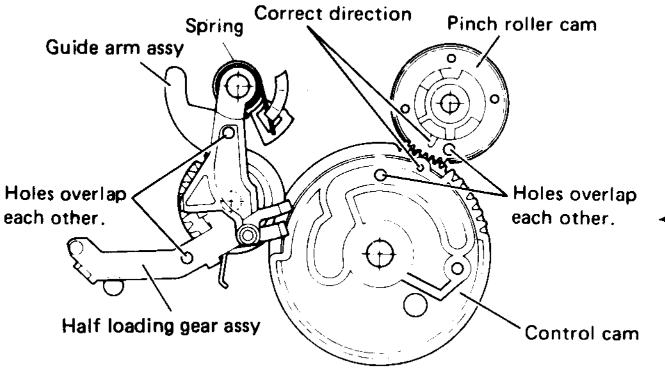
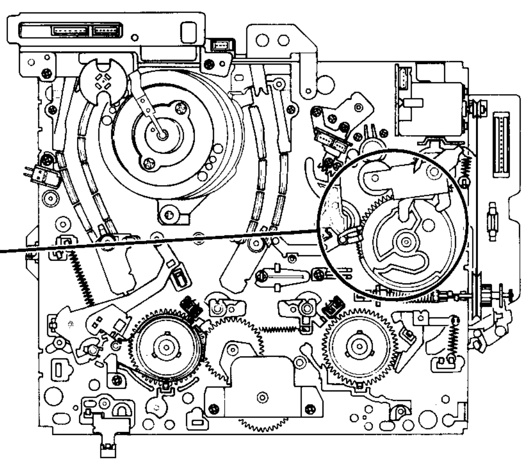
1.5 MAIN PARTS REMOVAL AND REPLACEMENT

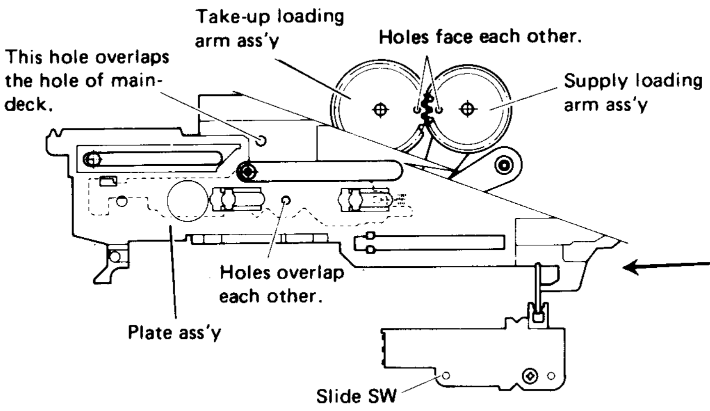
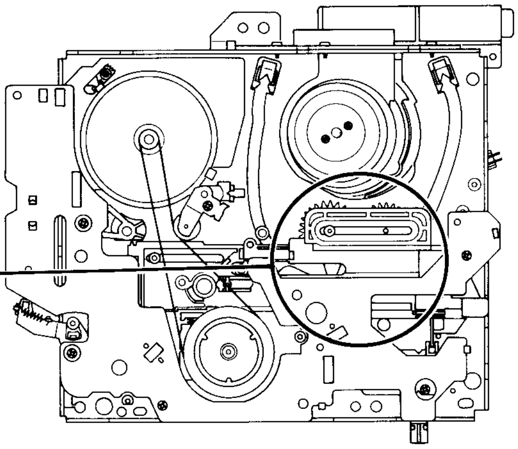
No.	Item	Checkpoints	Adjustment and Checks
1	Upper drum assembly •Symptoms: FM signal absent, intermittent or weak on one channel; large difference in channel output levels •Cause: Worn or damaged video heads, poor response, etc.  **Fig. 1-5-1** DRUM TOP VIEW	 **Fig. 1-5-2** Drum Position Mounting direction See Fig. 1-5-1. (Symptom: no picture)	After replacing, observe that upper drum hole A is opposite the motor axis from lower drum hole B.
		Axis wobble See Fig. 1-5-2. (Symptom: jitter, poor FM linearity) PB FM: Main board TP206 FF: Main board TP411	Record and playback in SP mode. Confirm absence of large difference between channels. (Fig. 1-5-3)  **Fig. 1-5-3** Axis wobble
	 Adjust Roller driver PTU94002 Hex driver Loosen Tighten 1.25mm **Fig. 1-5-4** S.T. Pole base	FM linearity check See Fig. 1-5-5. (Symptom: vertical sync absent, picture noise) PB FM: Main board TP206 FF: Main board TP411  **Fig. 1-5-5** FM linearity $\frac{b}{a} \geqq 0.7, \frac{c}{a} \geqq 0.65, \frac{d}{a} \geqq 0.65$	 **Fig. 1-5-6** S.T. Pole base position 1) Play stairstep signal of the MH-2 Alignment Tape. Confirm absence of obvious FM waveform loss and that operating the Tracking yields the optimum point. 2) Refer to Fig. 1-5-4, adjust for loss at the left edge (drum entry) of the FM waveform by turning the guide roller of the supply pole base. Similarly, adjust for loss at the right edge (drum exit) by turning the guide roller of the take-up pole base. **Note:** ***If FM loss occurs on both channels and cannot be corrected by adjusting the guide rollers, the lower drum needs replacement.***

No.	Item	Checkpoints	Adjustment and Checks
	PB switching point •Symptom: switching noise at picture bottom.	VIDEO OUT (TP210)  **Fig. 1-5-7** PB Switching Point	1) Connect an oscilloscope to VIDEO OUT (TP210). 2) Set the MH-2 alignment tape into the cassette housing. Play back the stairstep segment of MH-2 alignment tape. 3) Trigger the oscilloscope externally (– slope) with the signal from TP411 (DRUM FF) of the main board. 4) Adjust R420 to position the trigger point 6.5 H ±0.5 H from V. sync as shown in Fig. 1-5-7.
2	Lower drum assembly •Symptoms: Poor FM linearity, noisy rotation, jitter •Cause: Lead and bearing wear	Check FM linearity and switching point.	See above upper drum assembly items.
		Check control head phase (X value) Symptom: tracking error PB FM: Main board TP206 FF: Main board TP411	1) Play stairstep signals of MH-2 Alignment Tape. Engage the Tracking Preset mode by pressing the + and – buttons simultaneously. Confirm that the same maximum FM waveform level is obtained as when the tracking is adjusted manually. 2) Refer to the A/C head adjustments.
3	**A/C head**  **Fig. 1-5-8** Temporary height  Screw ① Screw ② A/C head Tape T. guide pole Screw ③ **Fig. 1-5-9** Inclination/Azimuth/ Height adj.	 **Fig. 1-5-10** A/C HEAD position Temporarily set height as indicated in Fig. 1-5-8.	Set the height as indicated in Fig. 1-5-8 to facilitate tape transport checks and adjustments.
		Tilt (forward inclination) See Fig. 1-5-9. (Symptom: audio level varies greatly.)	1) Run tape, turn screw ① counterclockwise to where slight curling of the tape occurs at the lower flange of the take-up guide roller. 2) Then slowly turn the screw clockwise to where the curling ceases.
		Azimuth See Fig. 1-5-9. (Symptoms: audio low level or noisy) Audio output: Main board AUDIO OUT	1) Play stairstep signal (with audio 6 kHz) of the MH-2 Alignment Tape. Observe audio output signal with oscilloscope. 2) Turn screw ② and adjust for maximum audio output level.

No.	Item	Checkpoints	Adjustment and Checks
	 **Fig. 1-5-11** Height Adj	Height See Figs. 1-5-9 and 1-5-11. (Symptom: low audio and control signal levels)	1) Run tape and observe the control head area. 2) Turn screws ①, ② and ③ by small and equal amounts until 0.1 to 0.2 mm of the head core bottom can be seen. **Note:** *If difficult to observe, play stairstep signal of MH-2 Alignment Tape and adjust for maximum audio output and control pulse level.*
		FM linearity	Refer to upper drum assembly items. If adjustment is major, again check the azimuth.
	 **Fig. 1-5-13** CTL head phase **Note:** *Trigger the oscilloscope externally signal from TP411 (DRUM FF). Use (+) trigger for MH-2 alignment tape.*	Control head phase See Fig. 1-5-12 PB FM: Main board TP206 FF: Main board TP411  Screw ④ A/C head (From Drum) Screw ⑤ (To Capstan) **Fig. 1-5-12** CTL head phase	1) Play stairstep signal of MH-2 Alignment Tape and observe the FM waveform. Set for Tracking Preset by pressing the + and – buttons simultaneously in the onscreen mode. 2) Loosen screws ④ and⑤. Set the A/C head positioning tool on screw ④, with the stud inserted into the nearby oblong hole. 3) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig. 1-5-13. 4) Tighten screw ⑤ . Remove the tool and tighten screw ④.

No.	Item	Checkpoints	Adjustment and Checks
4	Tension arm assembly Tension band assembly  **Fig. 1-5-14** Tension arm assy	Tension pole position See Fig. 1-5-14. (Symptom: poor FM waveform response)	 **Fig. 1-5-15** Tension arm position 1) Check that the cassette housing is in the eject state (internal holder of the cassette housing is locked in raised position). 2) Turn the eccentric adjust pin to align the notch of the pin with the tension arm indent as shown in Fig. 1-5-14.
		Back tension (Symptom: skew)	1) When the tension pole position is correctly adjusted, the back tension will assume the correct value. 2) Use the Back Tension Cassette Gauge and set for the playback mode. Confirm reading of 30 to 43. 3) Changing the tension pole position in order to vary the back tension will cause adverse effects elsewhere.

No.	Item	Checkpoints	Adjustment and Checks
5	Pinch roller cam Control cam Half loading gear assembly Guide arm assembly		Set mechanism to Eject mode (internal holder of the cassette housing is locked in raised) position.
	 Spring Correct direction Pinch roller cam Guide arm assy Holes overlap each other. Holes overlap each other. Half loading gear assy Control cam **Fig. 1-5-16** Control/Pinch roller cam		 **Fig. 1-5-17** Control cam position
		Important: Do not remove or disturb parts other than those mentioned. See Fig. 1-5-16.	1) When installing the pinch roller cam, overlap the largest hole of the gear portion with the hole of the deck. 2) Set the control cam on the deck with the hole of the groove overlapped with the hole of the deck. Observe that the small hole of the control cam and the ridge of the pinch roller cam are aligned. (If the control cam does not fit readily, shift the rear plate assembly within the range of play.) 3) Install the half loading gear assembly with the hole overlapped with the hole of the deck. Secure with E-ring. 4) Install the guide assembly over the spring and with the hole overlapping that of the deck. Engage the spring correctly.
		Cassette housing assembly	Install the cassette housing assembly with the mechanism in the Eject mode. Also observe that the inner holder of the housing is raised and locked.
6	Clutch assembly	Take-up torque (Symptom: inadequate take-up torque)	1) Remove cassette housing and set for play-back mode (see Section 1.2). 2) Set torque gauge on the take-up reel disk. Gradually relax your grip on the gauge and read the needle indication at the point the gauge begins to rotate with the disk. Confirm indication of 60 to 100.

No.	Item	Checkpoints	Adjustment and Checks
7	Take-up loading arm assembly Supply loading arm assembly Plate assembly		**Note:** • *Set mechanism to the Eject or Stop mode before removing these parts.* • *The flange of the plastic rivet securing the loading arm assembly and the pole base assembly can be damaged by attempting to remove it directly. Press the loading arm assembly firmly to prevent motion. Then use a narrow-shafted tool to press the rivet from the shaft end to remove it.*
		Mounting position alignment • Remove the tension arm assembly to facilitate operation. See Fig. 1-5-18.	1) Set the supply and take-up loading arm assemblies so that the holes of the gear portions are aligned, then secure to the pole base assemblies with rivets. 2) Shift the plate assembly and install with the holes of the upper and lower components overlapped.
		Slide switch See Fig. 1-5-18.  Take-up loading arm ass'y Holes face each other. This hole overlaps the hole of main-deck. Supply loading arm ass'y Holes overlap each other. Plate ass'y Slide SW Fig. 1-5-18	Be sure to engage the slide switch slider with the edge of the plate assembly.  Fig. 1-5-19 T.S. Loading arm position

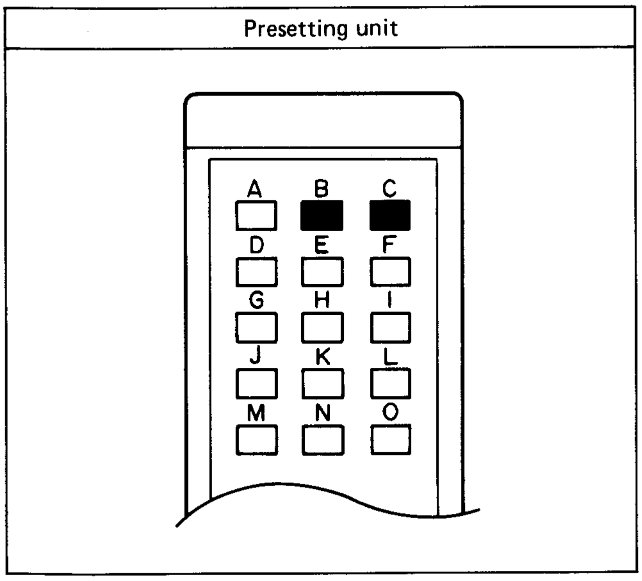
SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 PREPARATION

Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

2.1.1 Required test equipment

1. Color television or monitor
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Audio oscillator
5. Audio voltmeter
6. Digital voltmeter
7. Signal generator: RF/IF sweep/marker
8. Signal generator: PAL color bar, stairstep, video sweeper
9. Signal generator: Audio multiplex TV signal generator
10. Recording tape
11. Alignment tape: MH-2
12. Presetting unit (PTU94008)


Presetting unit
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

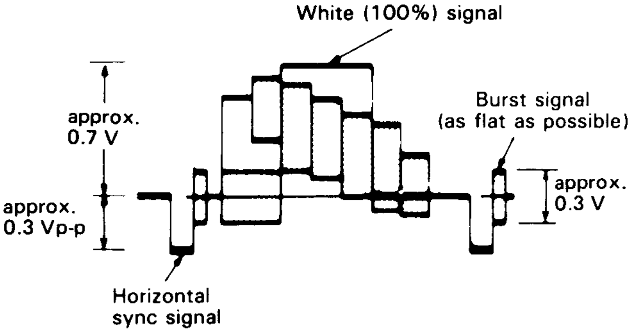

White (100%) signal
approx.
0.7 V
Burst signal
(as flat as possible)
approx.
0.3 V
approx.
0.3 Vp-p
Horizontal
sync signal

Fig. 2-1-1 Color bar signal of pattern generator

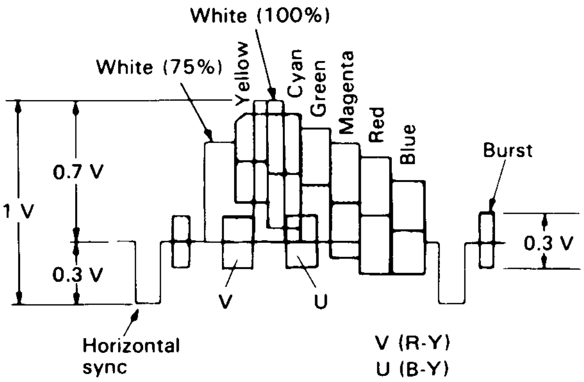

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
0.7 V
1 V
0.3 V
0.3 V
V
U
Horizontal
sync
V (R-Y)
U (B-Y)

Fig. 2-1-2 Color bar signal waveform

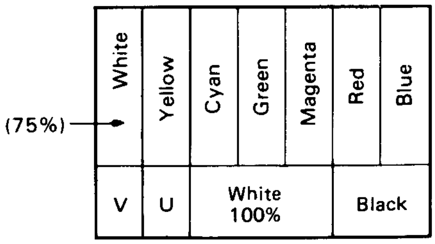

White
Yellow
Cyan
Green
Magenta
Red
Blue
(75%)
V
U
White
100%
Black

Fig. 2-1-3 Color bar pattern

2.1.2 Check and adjustment steps

The check and adjustment steps are provided in the following in the form of charts. For clarity, the nomenclature used in the charts is outlined below.

No.	Checks and adjustments are numbered in the recommended sequence in which they are to be performed.
Item	Name assigned to the particular check and adjustment step.
Check Point	Location to which measuring instrument (oscilloscope unless otherwise noted) is to be connected.
Adjustment Parts	Variable component (resistor, capacitor, etc.) to be adjusted in this step. Dash (–) indicates check only.
Signal & Mode	• Input signal required to perform adjustment. Dash (–) indicates that special signal is not required. • Equipment operating mode at time of check or adjustment.
Color bars	Color bars signal as video input.
Stairstep	Stairstep signal as video input.
1 kHz	1 kHz sinewave as audio input signal.
MH-2 color bars	Color bars segment of MH-2 alignment tape.
MH-2 stairstep	Stairstep segment of MH-2 alignment tape.
MH-2 1 kHz	1 kHz audio signal segment of MH-2 alignment tape.
MH-2 RF sweep	RF sweep segment of MH-2 alignment tape.
E-E	Power on and machine in Stop mode.
REC	Recording mode
PB	Playback mode
SEARCH	Search (FWDS and REVS) playback mode
SLOW	Slow motion playback mode
STILL	Pause during playback mode
SP mode	SP recording speed
Description	This column provides an explanation of the step, notes and adjustment values.

2.2 SWITCHING REGULATOR CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the SWITCHING REGULATOR board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	5 V DC output voltage	TP1	R37 (5 V DC)	•REC •SOURCE SEL: TUNER	1) Connect a digital voltmeter between TP1 and TP-GND. 2) Record in the TUNER mode, adjust R37 for 5.3 ± 0.05 V.

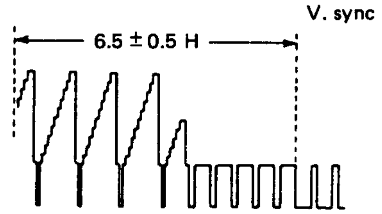
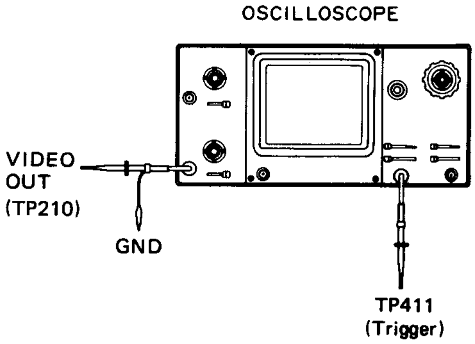
2.3 TIMER CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the TIMER board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Clock	IC1-16	C6 (clock)	•E-E	Note: *For below adjustments use 1 : 1 probe with input capacitance less than 100 pF.* 1) Connect a frequency counter between IC1-16 and GND. 2) Short TP1 to GND, then short the leads of capacitor C3 once in order to reset IC1. All FDP Segments and power LED are on. 3) Adjust C6 for 2048.000 ± 0.002 Hz (488.2808 to 488.2818 μs).

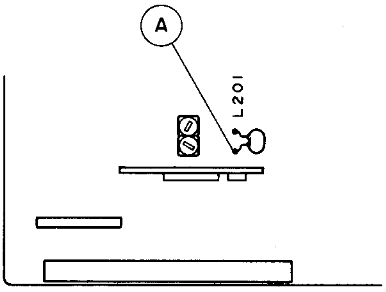
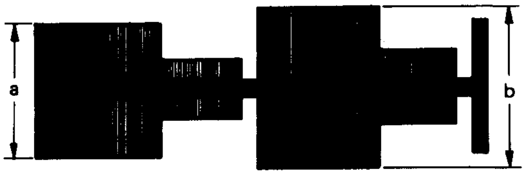
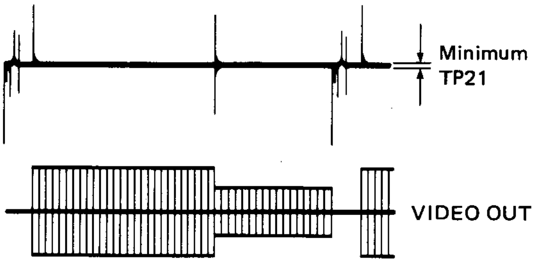
2.4 SERVO CIRCUIT

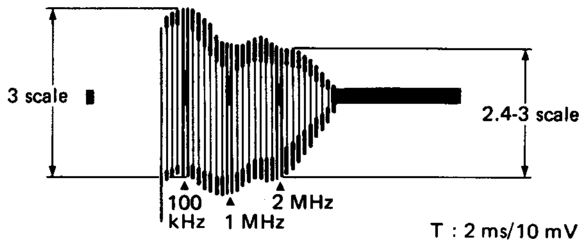
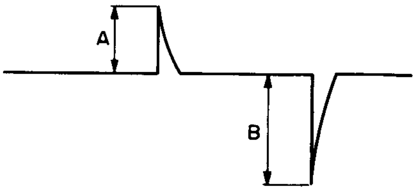
Note: *Unless otherwise specified, all test points and adjustments are located on the MAIN board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	SP PB switching point	VIDEO OUT (TP210)  Fig. 2-4-1 PB Switching Point	R420 (SP SW. P)	• PB • MH-2 (stairstep) • Trigger slope (–) • SP mode • AUTO TRACKING OFF	1) Connect an oscilloscope to VIDEO OUT (TP 210). 2) Play back the stairstep segment of MH-2 alignment tape. 3) Trigger the oscilloscope externally (– slope) with the signal from TP411. 4) Adjust R420 to position the trigger point 6.5 ± 0.5H from V. sync. 
2	SP slow tracking preset	Monitor-TV	Presetting unit (PTU 94008)	• SP mode • REC then PB (Slow ±1/6)	**Note:** *Set VCR to A mode by remote controller.* 1) Set recording video tape into the cassette housing. 2) Receive a color broadcast on a VHF-HI channel or supply a color bar signal to VIDEO IN. 3) Record a color broadcast or color bar signal in the SP mode. 4) Play back recorded signal in the FWD and REV slow mode and set the tracking control of the FRONT panel to the center position by simultaneously pressing the (+) and (–) tracking buttons. 5) Observe the display on a monitor-TV and adjust for optimum noise condition (best tracking) by depressing "B (–)" or "C (+)" buttons of presetting unit as required. 6) Depress the STOP button on the FRONT panel. 7) Confirm that the bar noise is not visible on the monitor in the slow mode.

2.5 VIDEO CIRCUIT

Note: ***Unless otherwise specified, all test points and adjustments are located on the MAIN board.***

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	REC color level and ch balance  **Fig. 2-5-1** Component view of VIDEO UNIT board	L201-Ⓐ (VIDEO UNIT board)	R220 (SP Rec color level) (Main board)	• PB mode • MH-2 color bar • SP mode • AUTO tracking : OFF	1) Connect an oscilloscope to L201- Ⓐ (IC201-19) pin as shown in Fig. 2-5-1 and observe color signal level. 2) Set the MH-2 alignment tape into the cassette housing, play back the color bar segment of MH-2 alignment tape. 3) Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the "+" and "–" tracking buttons. 4) Adjust by pressing the "+" and "–" tracking buttons of the Front panel for maximum level of the color waveform and make a note of the higher color level "A". 5) Press the STOP button on the FRONT panel and eject the MH-2 alignment tape.
	 **Fig. 2-5-2** REC color level			• REC then PB • Color bar signal • Auto tracking : OFF • SP mode	6) Set recording video cassette into the cassette housing. Supply a color bar signal to VIDEO IN. 7) Trigger the oscilloscope externally with the signal from TP411 (DRUM FF) of the Main board. Use (–) trigger for CH1 and (+) trigger for CH2. 8) Record a color bar signal in the SP mode. 9) Play back recorded color bar signal. Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the "+" and "–" tracking buttons and confirm 85 ± 5% of the noted color level at IC201-19. If necessary, before recording, adjust R220 so that the higher level channel becomes 85 ± 5% of the noted level "A" during playback as shwon in Fig. 2-5-2. At this time, confirm that the channel level difference is within 3 dB. **Note:** ***Repeat the above step (9) several times.***
2	YNR NC balance  **Fig. 2-5-3**	TP21 (IC1-26) (VIDEO UNIT board)	R16 (NC BAL) (VIDEO UNIT board)	• E-E • INPUT SEL: AUX • Color bar • SP mode	1) Supply a color bar signal to VIDEO IN and connect an oscilloscope to TP21 (IC1-26 pin). 2) Adjust R16 for minimum DC step difference.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
3	SP PB Frequency  **Fig. 2-5-4** PB frequency	VIDEO OUT (TP201)	R226 (PB EQ)	• REC then PB • Video sweep • Auto tracking off	1) Terminate VIDEO OUT with monitor - TV (75 Ω load), supply a video sweep signal without burst to VIDEO IN. 2) Set recording video cassette into the cassette housing. Record a video sweep signal without burst in the SP mode. 3) Connect an oscilloscope to VIDEO OUT. Play back recorded video sweep signal in the SP mode, set the tracking of the Front panel to the Auto tracking off position by simultaneously pressing the (+) and (–) tracking buttons. 4) Use the control of the oscilloscope to position the 100 kHz region at graduation 3 (0 dB) of the oscilloscope scale. 5) Adjust R226 to position the 2 MHz of channel-1 portion at 2.4 – 3.0 (–1 ± 1 dB) of the oscilloscope graduations as shown in Fig. 2-5-4. At this time, confirm that the channel difference is within 3 dB.
			R226	• REC then PB • TV broadcast • Auto tracking off	**Alternate method** 1) Set recording video cassette into the cassette housing, receive a colour broadcast on a VHF channel. 2) Record a colour broadcast that shows a good depiction of human facial contours. 3) Play back recorded colour broadcast, set the tracking of the Front panel to the Auto tracking off position by simultaneously pressing the (+) and (–) tracking buttons. 4) Adjust R226 to obtain distinct facial features on the monitor. **Note:** ***R226 nearly at centre position.***
4	SECAM DET.	IC251-18 (VIDEO UNIT board)	LC251 (VIDEO UNIT board)	• E-E • SECAM color bar	1) Connect an oscilloscope to pin 18 of IC251. 2) Adjust LC251 so that A and B are related as follows: A : B = 3 : 4 = 0.84 Vp-p : 1.11 Vp-p  **Fig. 2-5-5**

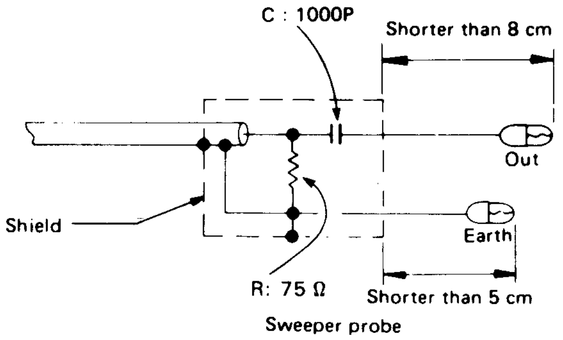
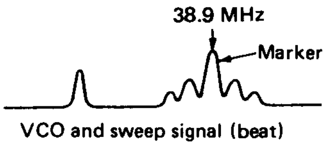
2.6 AUDIO CIRCUIT

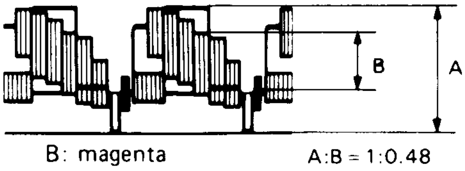
Note: *Unless otherwise specified, all test points and adjustments are located on the MAIN board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Audio Bias Level	TP31 (+) TP32 (–)	R11	• SOURCE Select: AUX • SP mode • REC mode • No signal	1) Connect a millivoltmeter between TP31 and TP32. 2) Set for REC mode without incoming signal. 3) Adjust R11 for 1.9 mVrms.

2.7 TUNER/IF CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the TUNER/IF board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
	Equipment required: 1. Oscilloscope 2. IF sweep signal genrator with suitable markers (PIF, etc.) 3. Sweeper probe (sweep signal supply cable) as shown below.				 C : 1000P Shorter than 8 cm Out Shield Earth R: 75 Ω Shorter than 5 cm Sweeper probe **Fig. 2-7-1**
1	VCO	IC1-28  VCO and sweep signal (beat) **Fig. 2-7-2**	T2 (VCO)	• Sweep genrator out: 70 dBμ (38.9 MHz) • Tuner mode without antenna IN	1) Use a sweeper probe as shown in Fig. 2-7-1 and connect the sweep generator output to pin 1 of SAW 1. Adjust the sweep gain so that the waveform does not distort as observed with the oscilloscope. Connect the oscilloscope to pin 28 of IC1 (VIDEO DET OUT) and adjust T2 to align the waveform with the frequency marker as shown in Fig. 2-7-2.
				• TV broadcast • Tuner mode	**Alternate method:** 1) Receive a color broadcast on a VHF-HI channel. 2) Adjust T2 to obtain a fine picture on the monitor.

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
	• **Before the following adjustments:** 1. Connect a cable to ANT IN and terminate TV OUT at 75 Ω. 2. Set a TV channel signal generator as follows. Video : 65 dBμ/75 Ω, color bar 87.5% modulation Audio : 55 dBμ/75 Ω, 1 kHz ± 50 kHz deviation				
2	RF AGC	IF terminal of Front end	R21	• TV signal • Tuner mode	1) Connect the oscilloscope to IF terminal of U/V Tuner (Front end). Adjust R21 for maximum level, then again adjust R21 for –8 dB again.
		MONITOR	R21	• TV broadcast • Tuner mode	**Alternate method:** Note: *Adjust R21 (RF AGC) to correct for excess noise in the picture or when streaky cross interference occurs due to strong electrical fields.* 1) Adjust R21 to minimize noise or streaks on the TV screen. 2) Check for absence of abnormality on all channels.
3	Color Level	CN1-4 (VIDEO OUT) TUNER CTL board	R40	• TV signal • Tuner mode • Color bar	1) Receiving a color bar signal. Set the Y level for 100% reference signal and then adjust R40 for a magenta level of 48% at pin 4 of CN1.
	 Fig. 2-7-3				
				• TV broadcast • Tuner mode	**Alternate method:** 1) Receive a color broadcast on a VHF-HI channel. 2) Adjust R40 so that the magenta level becomes 2/3% of the sync. level.
4	Sync det	Across C33	TP5 (Sync det)	• TV broadcast • Tuner mode	1) Receive a colour broadcast on a VHF-HI channel. Connect oscilloscope across C33. 2) Set the oscilloscope to DC mode Adjust T5 to obtain maximum level.

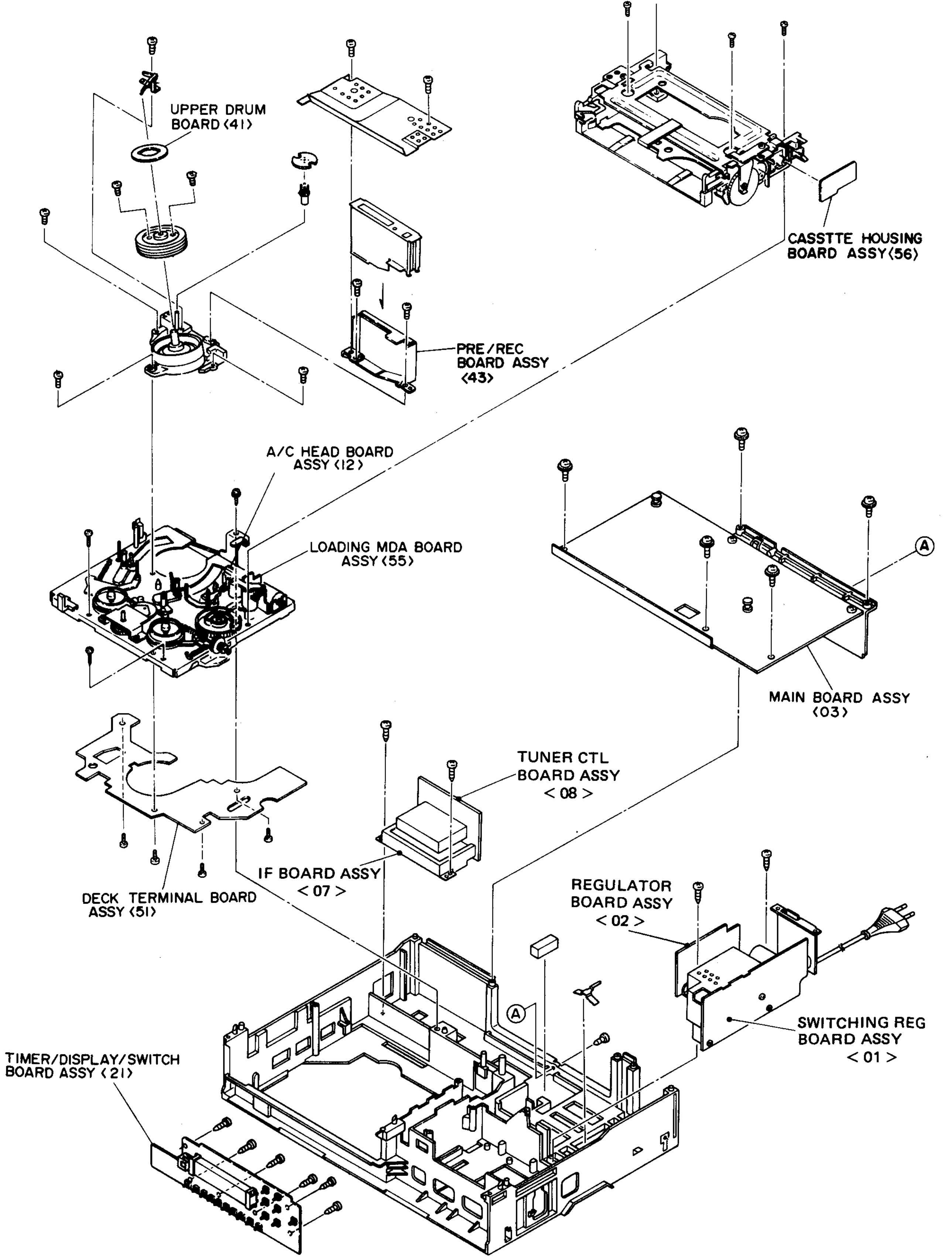
2.8 ON SCREEN CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the MAIN board.*

No.	Item	Check Point	Adjustment Parts	Signal & Mode	Description
1	Character Position	TP901	C905 (CHARA POSI)	• E-E	Note: *For below adjustments use 1 : 1 probe with input capacitance less than 100 pF.* 1. Connect a frequency counter to TP901 and GND. Short IC901-3 pin to GND and short IC901-30 pin to IC901-32 pin (SWD 5 V). 2. Adjust C905 for 7.30 ± 0.05 MHz without video signal.
2	Back ground Color	TP902	C916 (BACK COLOR)	• E-E	1. Connect a frequency counter to TP902 and GND. 2. Adjust C916 for 17.73447 ± 0.00030 MHz.

SECTION 3
CHARTS AND DIAGRAMS

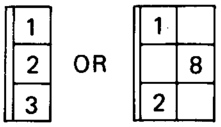
3.1 CIRCUIT BOARD AND LOCATION


UPPER DRUM BOARD ‹41›
CASSTTE HOUSING BOARD ASSY‹56›
PRE/REC BOARD ASSY ‹43›
A/C HEAD BOARD ASSY ‹12›
LOADING MDA BOARD ASSY ‹55›
Ⓐ
MAIN BOARD ASSY ‹03›
TUNER CTL BOARD ASSY < 08 >
IF BOARD ASSY < 07 >
DECK TERMINAL BOARD ASSY ‹51›
REGULATOR BOARD ASSY < 02 >
Ⓐ
SWITCHING REG BOARD ASSY < 01 >
TIMER/DISPLAY/SWITCH BOARD ASSY ‹21›

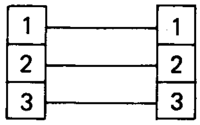
3.2 GENERAL INFORMATION

3.2.1 Connections

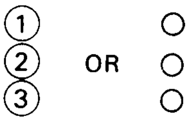
Note:
Unless otherwise specified, only signal input flow is indicated.
Connection arrows indicate only signal outputs.



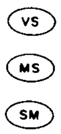
: Connectors



: Board in connectors



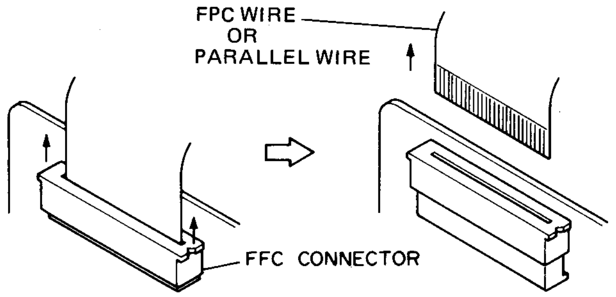
: Direct connections



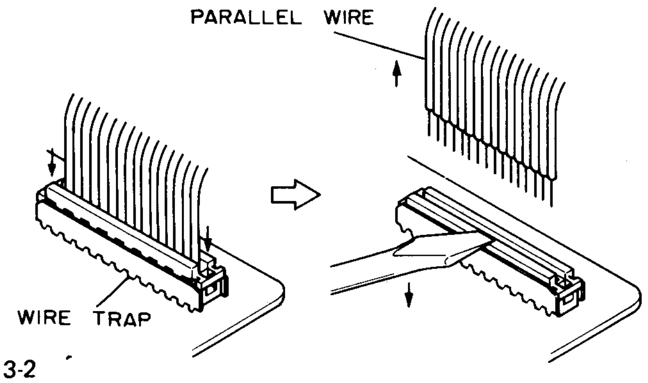
: Connected pattern in the board.
Abbreviations
V : Video M : Mechacon
S : Servo A : Audio
VS : Signal flow from video to servo.

3.2.2 Disconnecting the flatwire

1. Pull the connector structure upward to release the clamp when removing or inserting the flat wire cable.

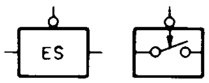


2. Depress the connector structure downward to release the clamp when removing or inserting the flat wire cable, as indicated below.

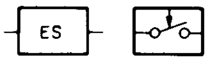


3.2.3 Indications

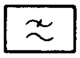
AUX : Active only at high.
$\overline{AUX}$: Active only at low.
$\bar{A}\bar{U}\bar{X}$: Active only at middle.
$\bar{A}U\bar{X}$: Active only at open.



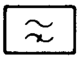
: Active only at low for electronic switch.



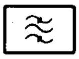
: Active only at high for electronic switch.



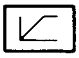
: Low pass filter.



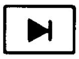
: High pass filter.



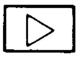
: Band pass filter.



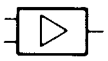
: Limiter.



: Detector



: Amplifier.



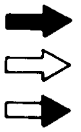
: Mixer stage.

3.2.4 Schematic diagram values

Unless otherwise specified.

1. All resistance values are in ohms, 1/6 W, 1/8 W, (refer to parts list).
2. All capacitance values are in μF, (P; PF).
3. All inductance values are in μH, (m; mH).
4. All diodes are 1SS133 or MA165, (refer to parts list).
5. Voltages are DC-measured (reference to ground) with a digital voltmeter during recording (SP mode) and playback (SP mode) with alignment tape. Where voltages differ between recording and playback, the voltage during playback is shown in parentheses.
6. Waveforms (VIDEO System) are measured (reference to ground) with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.
7. Waveforms (AUDIO System) are measured (reference to ground) with 1 kHz (−8 dBs) during recording and playback with alignment tape (1 kHz).
8. Shaded (▨) parts are critical for safety. Replace only with specified parts numbers.

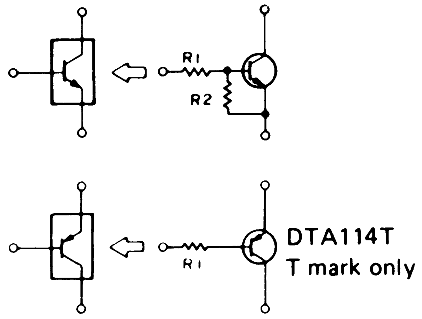
3.2.5 Signal flow in the schematic



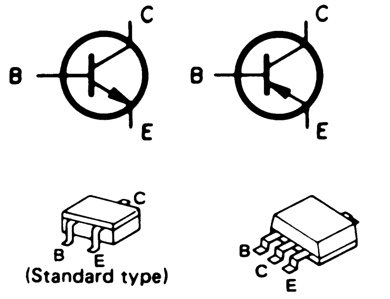
Recording signal path
Playback signal path
REC/PB signal path

3.2.6 Semiconductors

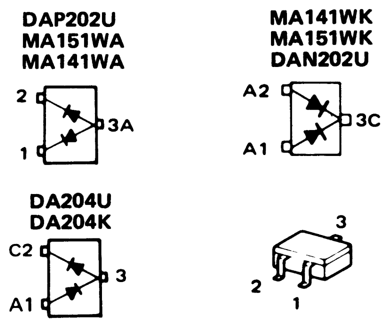
1. Digital transistor


R1
R2
R1
DTA114T
T mark only

2. Chip transistor


C
B
E
C
B
E
C
B
E
(Standard type)
B
C
E

3. Chip diode


DAP202U
MA151WA
MA141WA
2
1
3A
MA141WK
MA151WK
DAN202U
A2
A1
3C
DA204U
DA204K
C2
A1
3
3
2
1

Note:
The digital transistor includes built in resistors.
It features small size and high reliability.
Both PNP and NPN types are available.

Uses:
Inverter, Interface, driver circuits.

3.2.7 Replacement of chip parts

For replacing chip parts, proceed it as follows.
Use a well insulated fine-tipped soldering iron (approx. 17 W, 130°C ~ 260°C in temp.).
In addition, it is recommended to use a soldering iron (55 W approx.) with solder absorber for convenience.

Caution:
- Do not apply heat for more than 3 seconds.
- Do not rub electrodes.
- Do not reuse chips removed once. Discard them.
- Supplementary cementing is not required.

1. Soldered condition of chip parts

- Resistors, capacitors, etc.

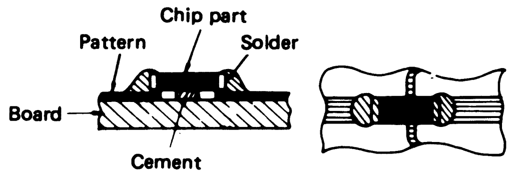

Chip part
Pattern
Solder
Board
Cement

Fig. 3-2-1 Soldering condition-1

- Transistors, diodes, etc.

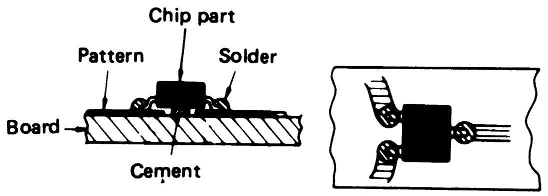

Chip part
Pattern
Solder
Board
Cement

Fig. 3-2-2 Soldering condition-2

2. How to remove chip parts

- Resistors, capacitors, etc.

1) Set a chip parts replacing tool onto the chip parts to hold it down.
2) Unsolder at a side of the chip parts.

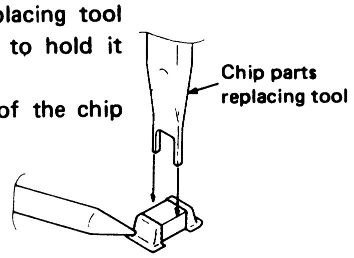

Chip parts replacing tool

Fig. 3-2-3 R/C removal-1

3) Remove the chip parts by twisting and sliding it.

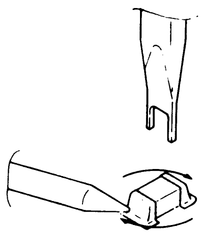


Fig. 3-2-4 R/C removal-2

3. How to remove transistors, diode.

1) Unsolder at the one-lead side of the chip parts.

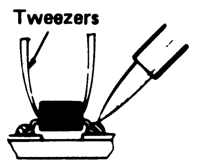


Fig. 3-2-5 Tr/Diode removal-1

2) Lift the unsoldered side upwards.

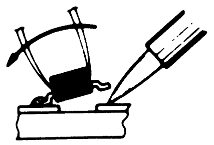


Fig. 3-2-6 Tr/Diode removal-2

3) Heat the other two leads simultaneously and remove the chip parts upwards.

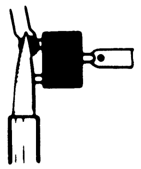


Fig. 3-2-7 Tr/Diode removal-3

4. Preheating and soldering

When setting new chip parts, especially capacitors, but except transistors, preheat them with hot air (150°C approx.) by use of a blower type of hair dryer for about 2 minutes just before soldering. For soldering, use a soldering iron of 30 watt approximately.

5. How to set and solder chip parts

1) Presolder the contact points of the circuit pattern to which the chip parts will be soldered.

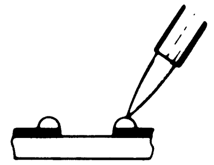


Fig. 3-2-8 Soldering-1

2) Holding down the chip parts with the chip parts replacing tool, solder it with a soldering iron.

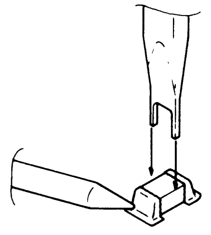
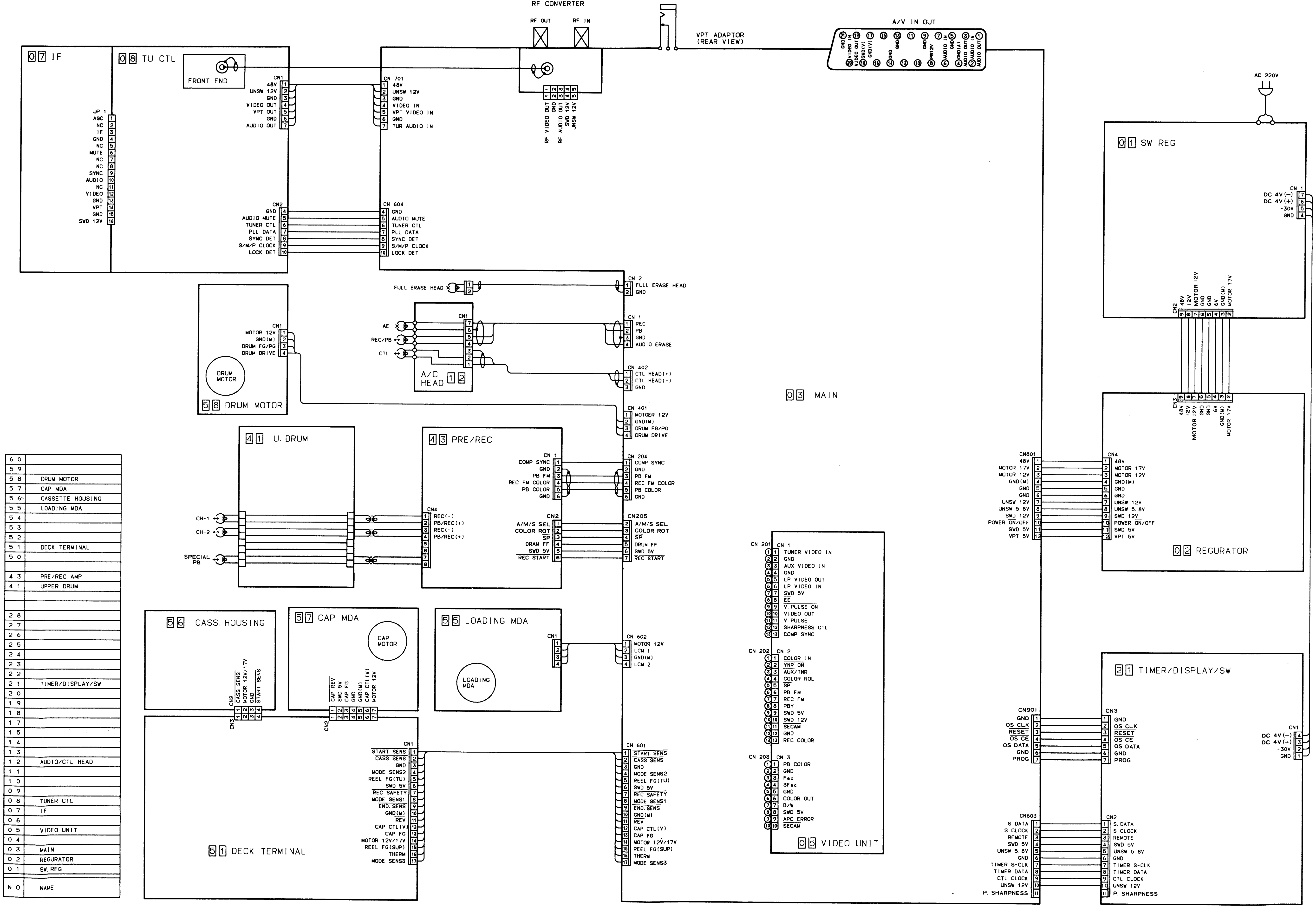


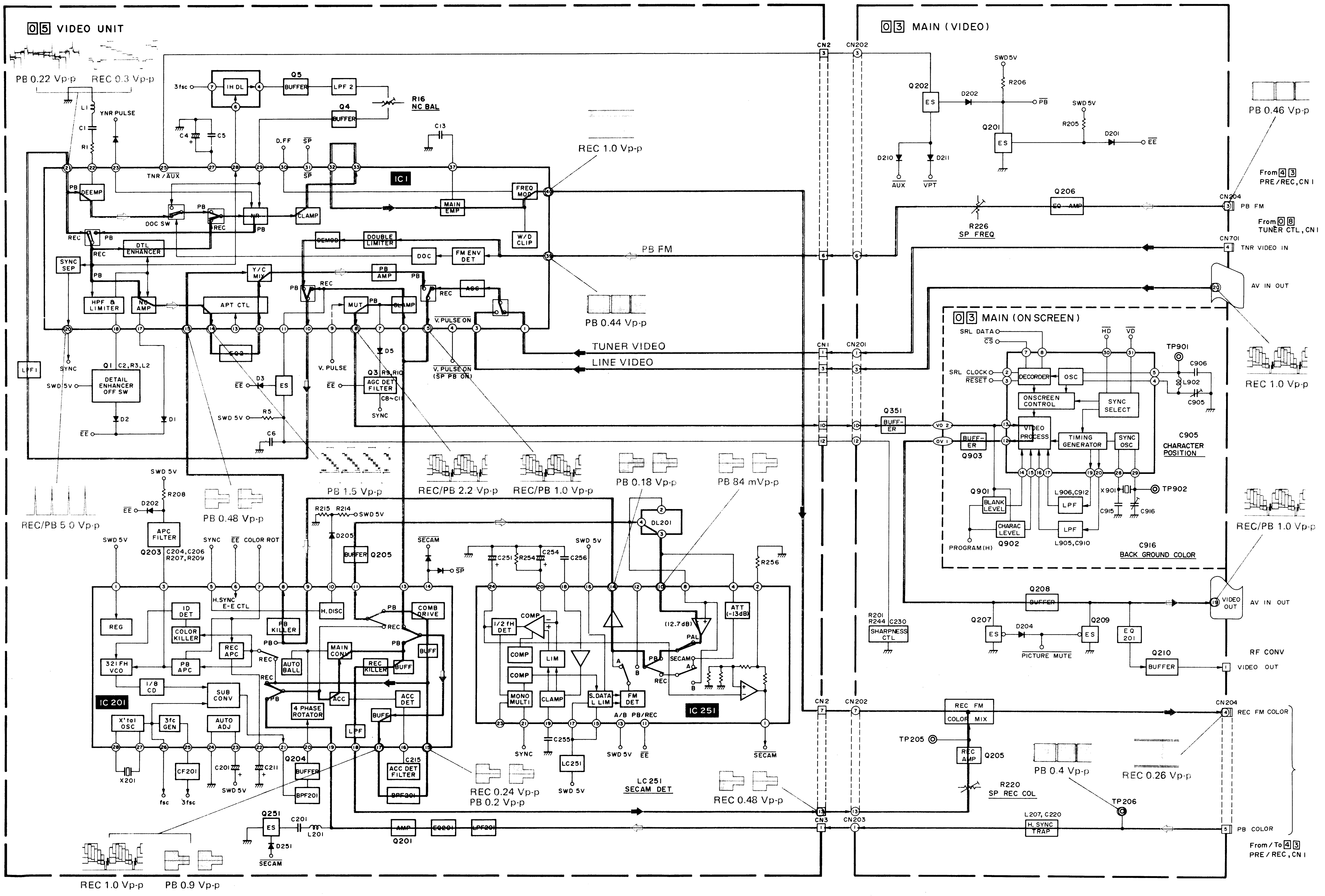
Fig. 3-2-9 Soldering-2

3.3 BOARD INTERCONNECTIONS

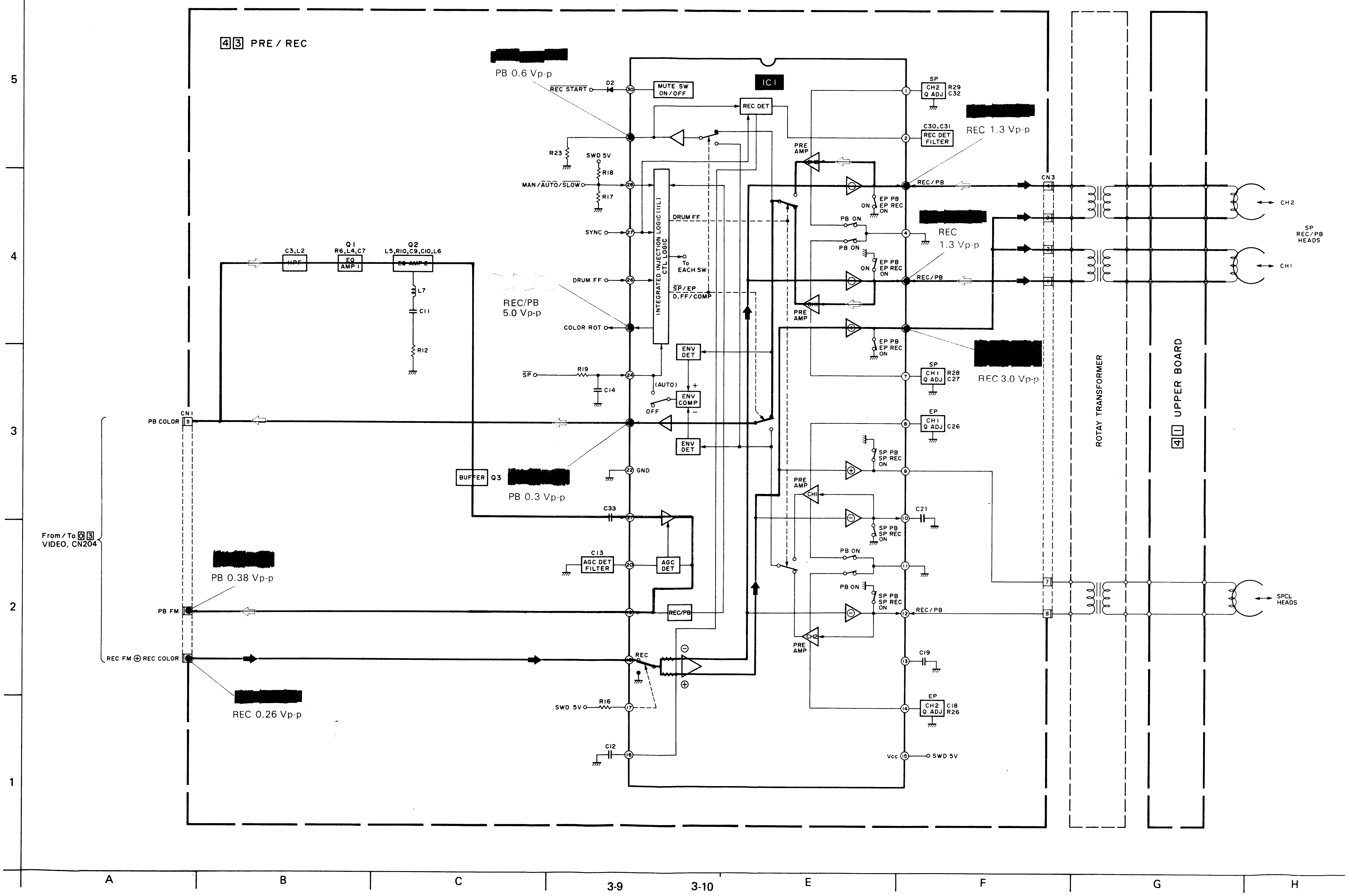

RF CONVERTER
RF OUT
RF IN
REMOTE PAUSE
VPT ADAPTOR (REAR VIEW)
A/V IN OUT
AC 220V
07 IF
08 TU CTL
FRONT END
JP 1
CN1
CN2
CN 701
CN 604
01 SW REG
02 REGURATOR
03 MAIN
05 VIDEO UNIT
21 TIMER/DISPLAY/SW
58 DRUM MOTOR
DRUM MOTOR
A/C HEAD 12
FULL ERASE HEAD
AE
REC/PB
CTL
41 U. DRUM
CH-1
CH-2
SPECIAL PB
43 PRE/REC
56 CASS. HOUSING
57 CAP MDA
CAP MOTOR
55 LOADING MDA
LOADING MDA
51 DECK TERMINAL
CN 2
CN 1
CN 402
CN 401
CN 204
CN205
CN 602
CN 601
CN 201
CN 202
CN 203
CN 3
CN801
CN4
CN901
CN603
CN3
CN1

NO	NAME
6 0	
5 9	
5 8	DRUM MOTOR
5 7	CAP MDA
5 6	CASSETTE HOUSING
5 5	LOADING MDA
5 4	
5 3	
5 2	
5 1	DECK TERMINAL
5 0	
4 3	PRE/REC AMP
4 1	UPPER DRUM
2 8	
2 7	
2 6	
2 5	
2 4	
2 3	
2 2	
2 1	TIMER/DISPLAY/SW
2 0	
1 9	
1 8	
1 7	
1 5	
1 4	
1 3	
1 2	AUDIO/CTL HEAD
1 1	
1 0	
0 9	
0 8	TUNER CTL
0 7	IF
0 6	
0 5	VIDEO UNIT
0 4	
0 3	MAIN
0 2	REGURATOR
0 1	SW. REG

3.4 VIDEO BLOCK DIAGRAM

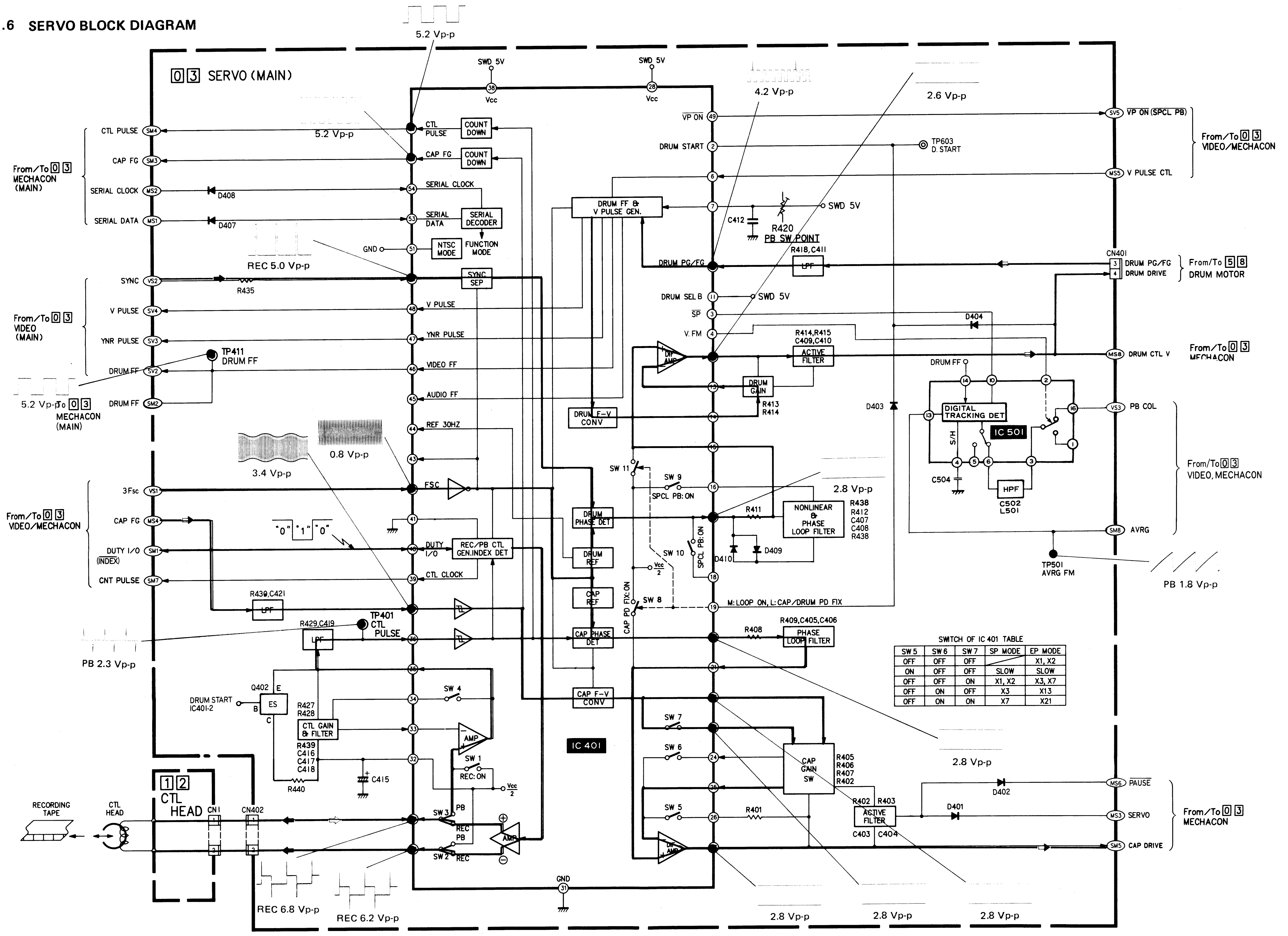

05 VIDEO UNIT
03 MAIN (VIDEO)
03 MAIN (ON SCREEN)
PB 0.22 Vp-p
REC 0.3 Vp-p
YNR PULSE
3fsc
1H DL
Q5
BUFFER
LPF 2
Q4
BUFFER
R16
NC BAL
C13
D.FF
SP
TNR / AUX
IC1
DEEMP
DOC SW
NR
CLAMP
MAIN EMP
FREQ MOD
W/D CLIP
REC 1.0 Vp-p
DTL ENHANCER
SYNC SEP
DEMOD
DOUBLE LIMITER
DOC
FM ENV DET
PB FM
Y/C MIX
PB AMP
AGC
HPF & LIMITER
NC AMP
APT CTL
MUT
CLAMP
V. PULSE ON
PB 0.44 Vp-p
EQ2
TUNER VIDEO
LINE VIDEO
LPF1
SYNC
Q1 C2,R3,L2
DETAIL ENHANCER OFF SW
SWD 5V
D2
D1
EE
D3
ES
R5
C6
V. PULSE
Q3 R9,R10
AGC DET FILTER
C8~C11
D5
V. PULSE ON (SP PB ON)
PB 1.5 Vp-p
REC/PB 2.2 Vp-p
REC/PB 1.0 Vp-p
PB 0.18 Vp-p
PB 84 mVp-p
REC/PB 5.0 Vp-p
R208
D202
APC FILTER
Q203 C204,C206 R207,R209
PB 0.48 Vp-p
COLOR ROT
R215 R214
D205
BUFFER Q205
SECAM
DL201
C251 R254 C254 C256
R256
REG
ID DET
COLOR KILLER
H.SYNC E-E CTL
H. DISC
PB KILLER
COMB DRIVE
REC APC
AUTO BALL
MAIN CONV
REC KILLER
BUFF
321 FH VCO
PB APC
1/8 CD
SUB CONV
ACC
ACC DET
4 PHASE ROTATOR
IC 201
X'tal OSC
3fc GEN
AUTO ADJ
LPF
Q204
BUFFER
BPF201
CF201
X201
C201 C211
fsc
3fsc
C215
ACC DET FILTER
BPF201
1/2 fH DET
COMP
LIM
MONO MULTI
CLAMP
S.DATA L LIM
FM DET
A/B PB/REC
ATT (-13dB)
(12.7dB)
PAL
SECAM
IC 251
C255
LC251
LC 251 SECAM DET
REC 0.24 Vp-p
PB 0.2 Vp-p
REC 0.48 Vp-p
Q251
C201
L201
D251
AMP
Q201
EQ201
LPF201
REC 1.0 Vp-p
PB 0.9 Vp-p
CN2
CN202
CN1
CN201
CN3
CN203
Q202
SWD5V
R206
D202
PB
R205
Q201
D201
EE
D210
D211
AUX
VPT
PB 0.46 Vp-p
From 43 PRE/REC, CN1
Q206
EQ AMP
CN204
PB FM
From 08 TUNER CTL, CN1
CN701
TNR VIDEO IN
R226
SP FREQ
AV IN OUT
SRL DATA
CS
SRL CLOCK
RESET
HD
VD
TP901
DECORDER
OSC
ONSCREEN CONTROL
SYNC SELECT
C906
L902
C905
REC 1.0 Vp-p
Q351
BUFF-ER
VO 2
OV 1
Q903
VIDEO PROCESS
TIMING GENERATOR
SYNC OSC
C905 CHARACTER POSITION
Q901
BLANK LEVEL
CHARAC LEVEL
Q902
PROGRAM(H)
L906,C912
LPF
X901
TP902
C915
C916
L905,C910
C916 BACK GROUND COLOR
REC/PB 1.0 Vp-p
Q208
BUFFER
VIDEO OUT
R201 R244 C230
SHARPNESS CTL
Q207
ES
D204
Q209
PICTURE MUTE
EQ 201
Q210
BUFFER
RF CONV
VIDEO OUT
REC FM COLOR MIX
TP205
REC AMP
Q205
R220
SP REC COL
PB 0.4 Vp-p
REC 0.26 Vp-p
TP206
L207, C220
H. SYNC TRAP
REC FM COLOR
PB COLOR
From / To 43 PRE/REC, CN1
A B C D E F G H
1 2 3 4 5 6

3.5 PRE/REC BLOCK DIAGRAM



4 3 PRE / REC
IC1
PB 0.6 Vp-p
REC START
D2
MUTE SW ON/OFF
REC DET
R23
SWD 5V
R18
MAN/AUTO/SLOW
R17
SYNC
DRUM FF
COLOR ROT
INTEGRATED INJECTION LOGIC (IIL) CTL LOGIC
DRUM FF
To EACH SW
SP/EP
D.FF/COMP
ENV DET
ENV COMP
(AUTO)
OFF
SP
R19
C14
GND
C33
C13
AGC DET FILTER
AGC DET
REC/PB
REC
SWD 5V
R16
C12
C3,L2
HPF
Q1
R6,L4,C7
EQ AMP 1
Q2
L5,R10,C9,C10,L6
EQ AMP 2
L7
C11
R12
REC/PB 5.0 Vp-p
BUFFER Q3
PB 0.3 Vp-p
CN1
PB COLOR
PB FM
REC FM ⊕ REC COLOR
PB 0.38 Vp-p
REC 0.26 Vp-p
From/To 0 3 VIDEO, CN204
SP CH2 Q ADJ R29 C32
C30,C31 REC DET FILTER
REC 1.3 Vp-p
PRE AMP
CH2
CH1
EP PB EP REC ON
PB ON
REC/PB
REC 1.3 Vp-p
REC 3.0 Vp-p
SP CH1 Q ADJ R28 C27
EP CH1 Q ADJ C26
SP PB SP REC ON
C21
C19
EP CH2 Q ADJ C18 R26
Vcc
SWD 5V
CN3
ROTAY TRANSFORMER
4 1 UPPER BOARD
CH2
CH1
SP REC/PB HEADS
SPCL HEADS
6
5
4
3
2
1
A
B
C
E
F
G
H

3.6 SERVO BLOCK DIAGRAM

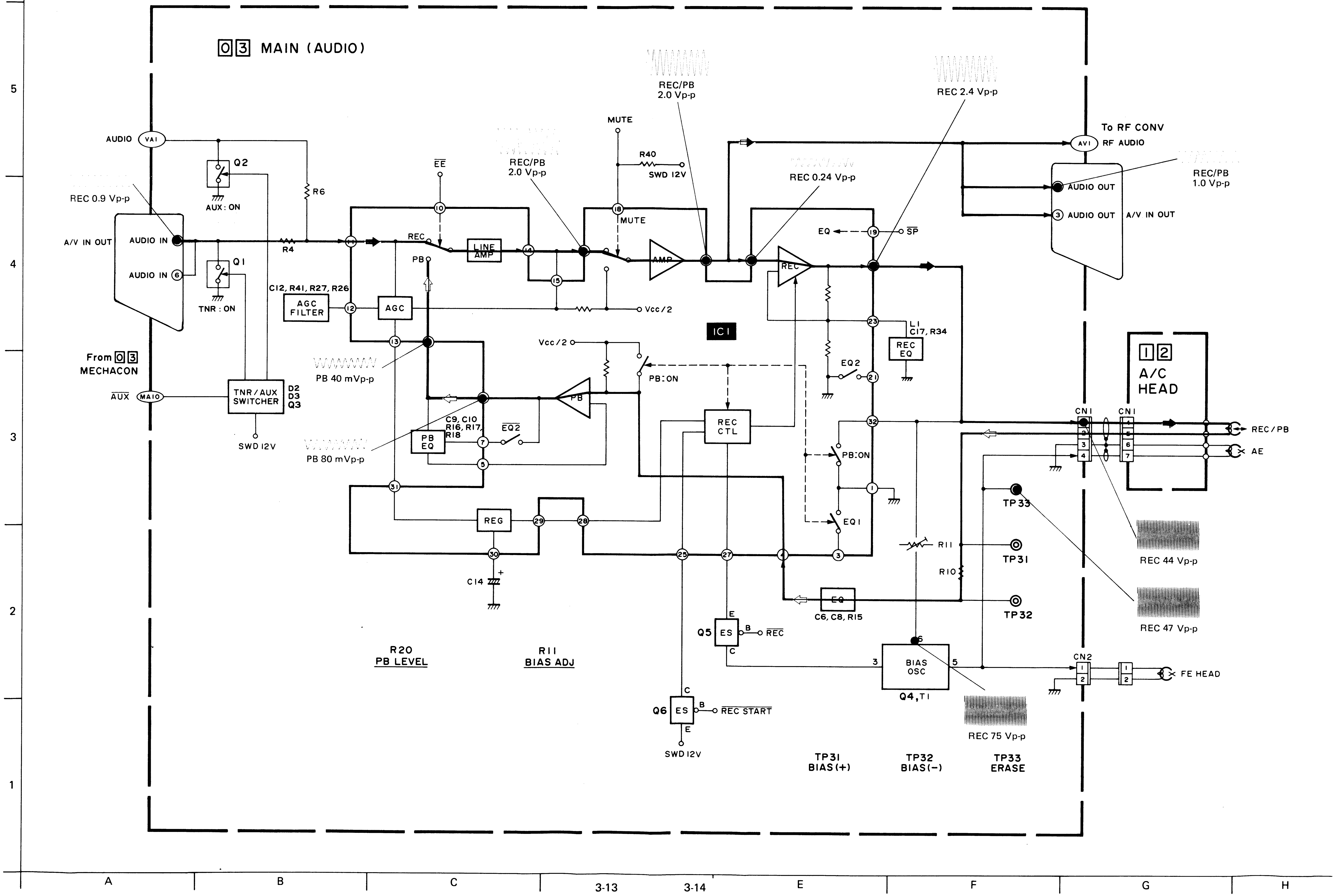


03 SERVO (MAIN)
5.2 Vp-p
SWD 5V
Vcc
4.2 Vp-p
2.6 Vp-p
CTL PULSE
CAP FG
SERIAL CLOCK
SERIAL DATA
From/To 03 MECHACON (MAIN)
D408
D407
COUNT DOWN
SERIAL DECODER
FUNCTION MODE
NTSC MODE
GND
SYNC SEP
REC 5.0 Vp-p
SYNC
R435
V PULSE
YNR PULSE
DRUM FF
From/To 03 VIDEO (MAIN)
TP411 DRUM FF
5.2 Vp-p
To 03 MECHACON (MAIN)
VIDEO FF
AUDIO FF
REF 30HZ
3.4 Vp-p
0.8 Vp-p
3Fsc
FSC
From/To 03 VIDEO/MECHACON
DUTY I/O (INDEX)
CNT PULSE
"0" "1" "0"
REC/PB CTL GEN.INDEX DET
CTL CLOCK
R439,C421
LPF
TP401 CTL PULSE
R429,C419
PB 2.3 Vp-p
Q402
DRUM START IC401-2
ES
R427 R428
CTL GAIN & FILTER
R439 C416 C417 C418
R440
C415
SW 4
SW 1
REC: ON
AMP
Vcc/2
SW 3
PB
REC
SW 2
RECORDING TAPE
CTL HEAD
12 CTL HEAD
CN1
CN402
REC 6.8 Vp-p
REC 6.2 Vp-p
GND
IC 401
VP ON
DRUM START
TP603 D. START
DRUM FF & V PULSE GEN.
C412
R420 PB SW POINT
R418,C411
DRUM PG/FG
DRUM SEL B
SP
V. FM
DIF AMP
R414,R415 C409,C410
ACTIVE FILTER
DRUM GAIN
R413 R414
DRUM F-V CONV
SW 11
SW 9
SPCL PB: ON
2.8 Vp-p
DRUM PHASE DET
R411
NONLINEAR & PHASE LOOP FILTER
R438 R412 C407 C408 R438
D410
D409
SW 10
DRUM REF
CAP REF
SW 8
CAP PD FIX: ON
M: LOOP ON, L: CAP/DRUM PD FIX
CAP PHASE DET
R408
R409,C405,C406
PHASE LOOP FILTER
CAP F-V CONV
SW 7
SW 6
SW 5
CAP GAIN SW
R405 R406 R407 R402
R401
R402 R403
ACTIVE FILTER
C403 C404
2.8 Vp-p
2.8 Vp-p
2.8 Vp-p
2.8 Vp-p
VP ON (SPCL PB)
V PULSE CTL
From/To 03 VIDEO/MECHACON
CN401
DRUM PG/FG
DRUM DRIVE
From/To 58 DRUM MOTOR
D404
DRUM CTL V
From/To 03 MECHACON
DRUM FF
D403
DIGITAL TRACKING DET
IC 501
S/H
C504
HPF
C502 L501
PB COL
From/To 03 VIDEO, MECHACON
AVRG
TP501 AVRG FM
PB 1.8 Vp-p
D402
PAUSE
D401
SERVO
CAP DRIVE
From/To 03 MECHACON

SWITCH OF IC 401 TABLE

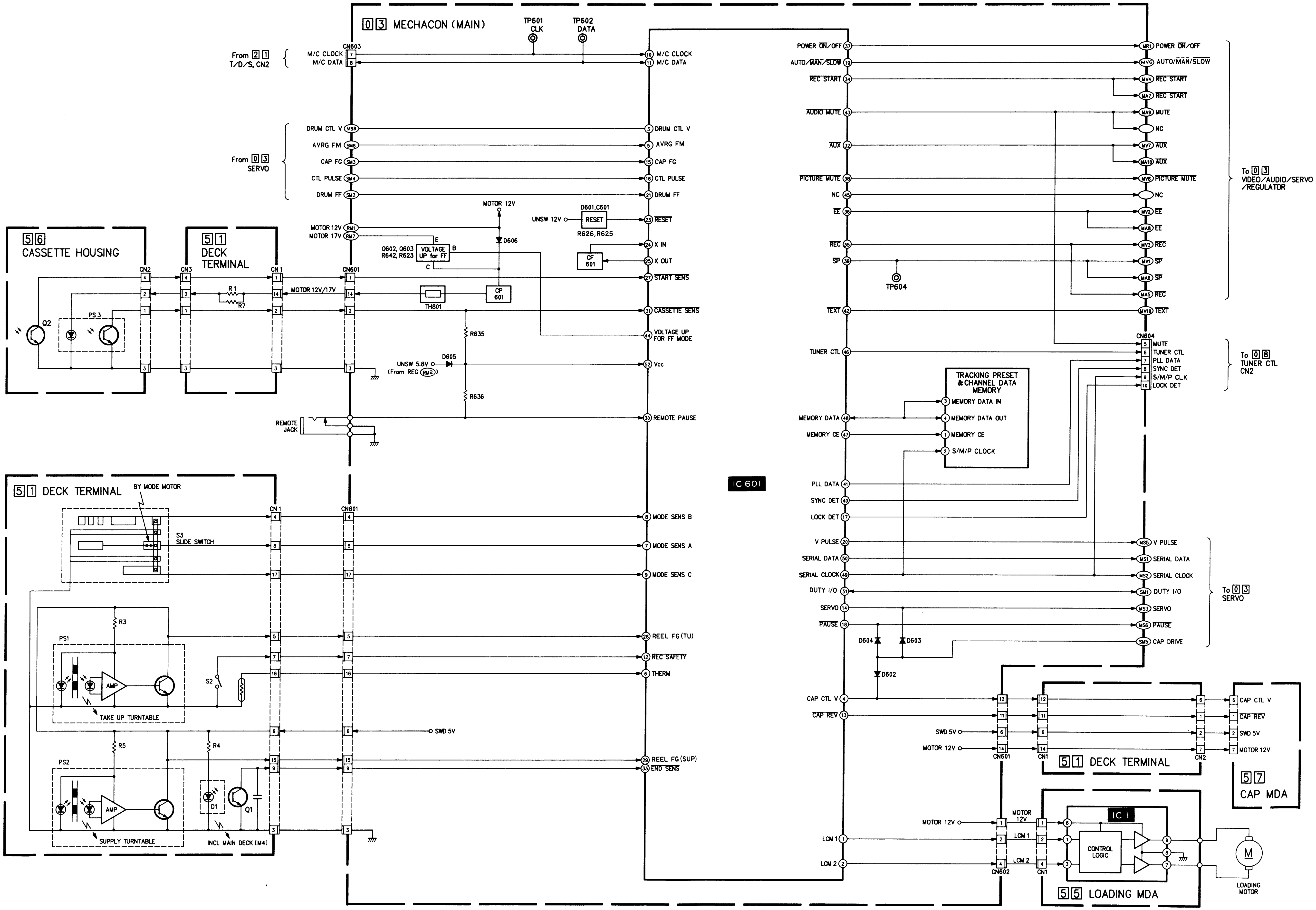
SW 5	SW 6	SW 7	SP MODE	EP MODE
OFF	OFF	OFF		X1, X2
ON	OFF	OFF	SLOW	SLOW
OFF	OFF	ON	X1, X2	X3, X7
OFF	ON	OFF	X3	X13
OFF	ON	ON	X7	X21

3.7 AUDIO BLOCK DIAGRAM

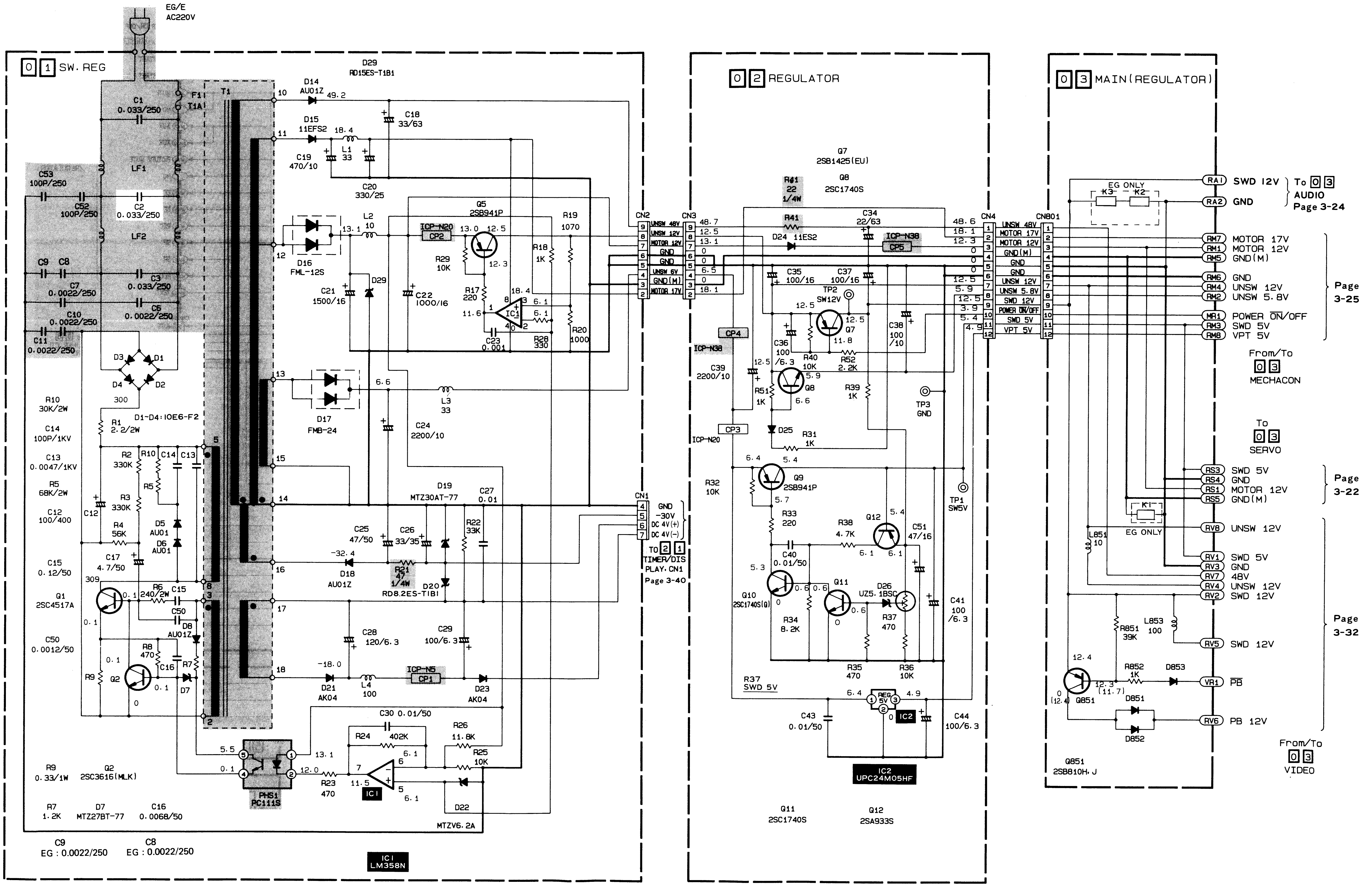


03 MAIN (AUDIO)
AUDIO
VA1
Q2
AUX : ON
R6
REC 0.9 Vp-p
A/V IN OUT
AUDIO IN
AUDIO IN ⑥
R4
Q1
TNR : ON
From 03 MECHACON
AUX
MA10
TNR/AUX SWITCHER
D2
D3
Q3
SWD 12V
C12, R41, R27, R26
AGC FILTER
AGC
EE
REC
PB
LINE AMP
REC/PB 2.0 Vp-p
MUTE
R40
SWD 12V
AMP
REC/PB 2.0 Vp-p
REC 0.24 Vp-p
REC 2.4 Vp-p
EQ
SP
REC
Vcc/2
IC1
L1
C17, R34
REC EQ
EQ2
PB 40 mVp-p
Vcc/2
PB : ON
PB
C9, C10
R16, R17, R18
PB EQ
EQ2
PB 80 mVp-p
REC CTL
PB : ON
EQ1
REG
C14
R11
R10
TP31
TP32
TP33
EQ
C6, C8, R15
Q5
ES
E
B
C
REC
BIAS OSC
Q4, T1
REC 75 Vp-p
Q6
ES
REC START
SWD 12V
R20 PB LEVEL
R11 BIAS ADJ
TP31 BIAS(+)
TP32 BIAS(−)
TP33 ERASE
To RF CONV
AV1
RF AUDIO
AUDIO OUT
③ AUDIO OUT
A/V IN OUT
REC/PB 1.0 Vp-p
12 A/C HEAD
CN1
CN1
REC/PB
AE
REC 44 Vp-p
REC 47 Vp-p
CN2
FE HEAD
6
5
4
3
2
1
A
B
C
D
E
F
G
H

3.8 SYSTEM CTL BLOCK DIAGRAM

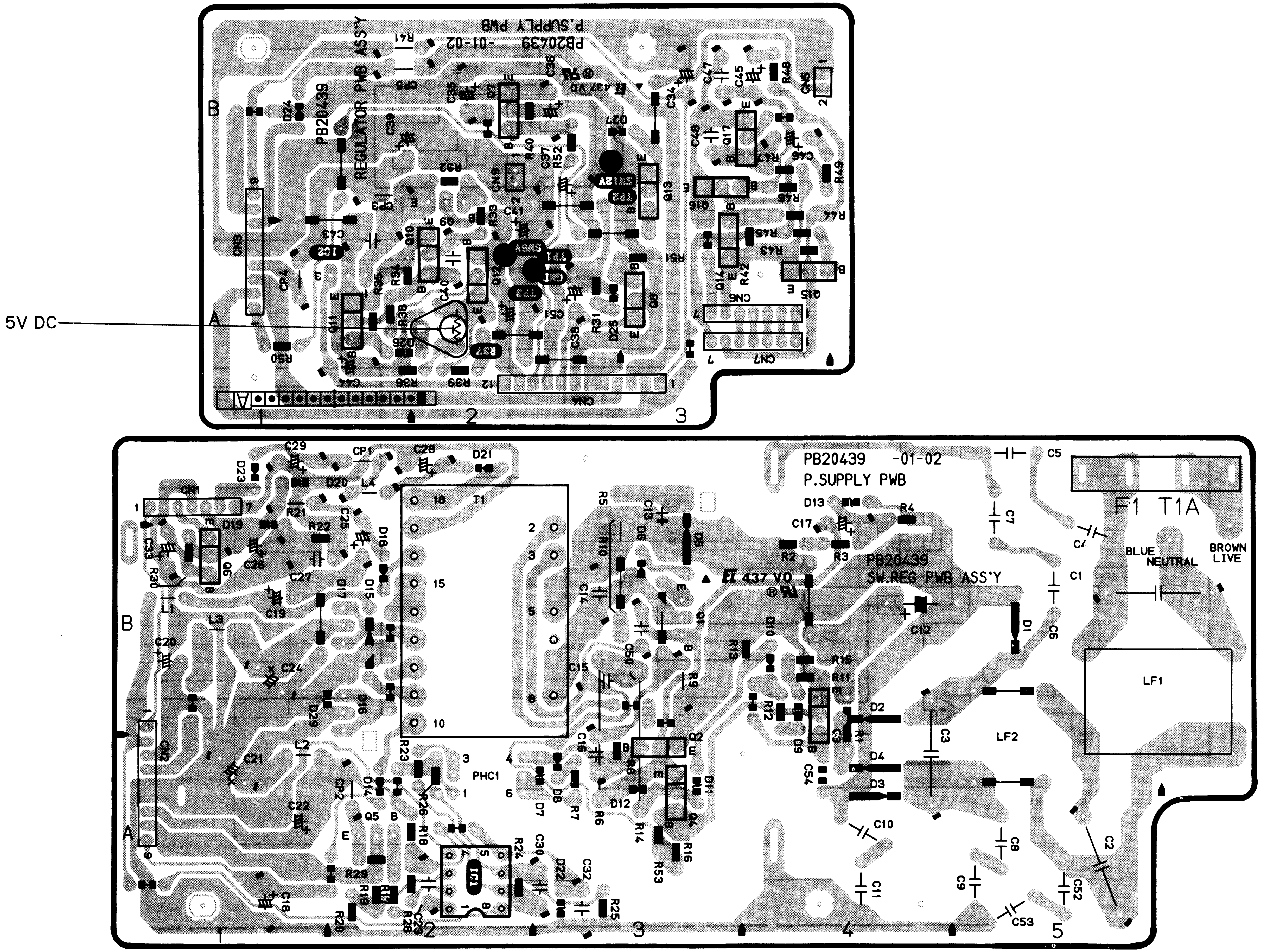

03 MECHACON (MAIN)
TP601 CLK
TP602 DATA
From 21 T/D/S, CN2
CN603
M/C CLOCK
M/C DATA
From 03 SERVO
DRUM CTL V
AVRG FM
CAP FG
CTL PULSE
DRUM FF
MOTOR 12V
MOTOR 17V
MOTOR 12V
D606
Q602, Q603 R642, R623
VOLTAGE UP for FF
CP 601
TH801
UNSW 12V
D601, C601
RESET
R626, R625
CF 601
56 CASSETTE HOUSING
51 DECK TERMINAL
CN2
CN3
CN1
CN601
Q2
PS3
R1
R7
MOTOR 12V/17V
R635
D605
UNSW 5.8V
(From REG RM2)
R636
REMOTE JACK
START SENS
CASSETTE SENS
VOLTAGE UP FOR FF MODE
Vcc
REMOTE PAUSE
X IN
X OUT
51 DECK TERMINAL
BY MODE MOTOR
S3 SLIDE SWITCH
PS1
R3
AMP
TAKE UP TURNTABLE
S2
R5
R4
PS2
SUPPLY TURNTABLE
D1
Q1
INCL MAIN DECK [M4]
SWD 5V
MODE SENS B
MODE SENS A
MODE SENS C
REEL FG (TU)
REC SAFETY
THERM
REEL FG (SUP)
END SENS
IC 601
POWER ON/OFF
AUTO/MAN/SLOW
REC START
AUDIO MUTE
MUTE
NC
AUX
PICTURE MUTE
EE
REC
SP
TP604
TEXT
To 03 VIDEO/AUDIO/SERVO /REGULATOR
CN604
TUNER CTL
PLL DATA
SYNC DET
S/M/P CLK
LOCK DET
To 08 TUNER CTL CN2
TRACKING PRESET & CHANNEL DATA MEMORY
MEMORY DATA IN
MEMORY DATA OUT
MEMORY CE
S/M/P CLOCK
MEMORY DATA
V PULSE
SERIAL DATA
SERIAL CLOCK
DUTY I/O
SERVO
PAUSE
CAP DRIVE
To 03 SERVO
D604
D603
D602
CAP CTL V
CAP REV
SWD 5V
MOTOR 12V
CN601
CN1
CN2
51 DECK TERMINAL
57 CAP MDA
CN602
LCM 1
LCM 2
IC 1
CONTROL LOGIC
M
LOADING MOTOR
55 LOADING MDA
A
B
C
E
F
G
H
1
2
3
4
5
6

3.9 POWER TRANS, POWER TRANSISTOR & REGULATOR (MAIN) SCHEMATIC DIAGRAM

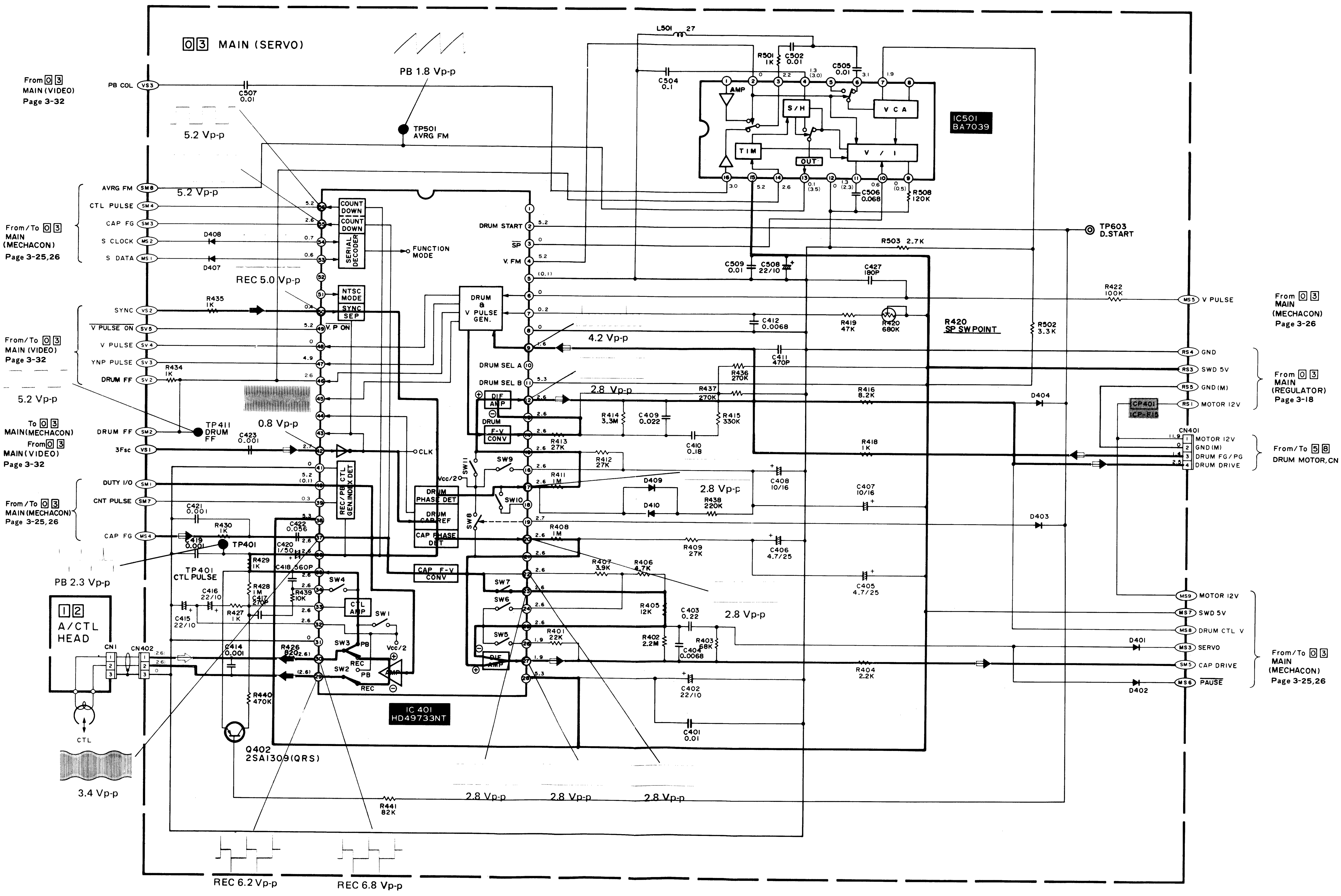


EG/E AC220V
0 1 SW. REG
0 2 REGULATOR
0 3 MAIN(REGULATOR)
C1 0.033/250
F1 T1A
T1
LF1
LF2
C53 100P/250
C52 100P/250
C2 0.033/250
C9 C8
C7 0.0022/250
C3 0.033/250
C10 0.0022/250
C6 0.0022/250
C11 0.0022/250
D1 D2 D3 D4
D1-D4: 10E6-F2
R10 30K/2W
C14 100P/1KV
C13 0.0047/1KV
R5 68K/2W
C12 100/400
C15 0.12/50
Q1 2SC4517A
C50 0.0012/50
R9 0.33/1W
Q2 2SC3616(MLK)
R7 1.2K
D7 MTZ27BT-77
C16 0.0068/50
C9 EG : 0.0022/250
C8 EG : 0.0022/250
R1 2.2/2W
R2 330K
R3 330K
R4 56K
C17 4.7/50
R6 240/2W
D5 AU01
D6 AU01
D8 AU01Z
R8 470
D29 RD15ES-T1B1
D14 AU01Z 49.2
D15 11EFS2 18.4
C18 33/63
C19 470/10
L1 33
C20 330/25
D16 FML-12S
L2 10
C21 1500/16
C22 1000/16
ICP-N20 CP2
Q5 2SB941P
R29 10K
R17 220
IC1
C23 0.001
R28 330
R18 1K
R19 1070
R20 1000
D17 FMB-24
L3 33
C24 2200/10
D19 MTZ30AT-77
C27 0.01
C25 47/50
C26 33/35
R22 33K
R21 47 1/4W
D18 AU01Z
D20 RD8.2ES-TIB1
C28 120/6.3
C29 100/6.3
D21 AK04
L4 100
ICP-N5 CP1
D23 AK04
C30 0.01/50
R24 402K
R26 11.8K
R25 10K
R23 470
D22 MTZV6.2A
PHS1 PC111S
IC1 LM358N
CN1 GND -30V DC 4V(+) DC 4V(-)
TO 2 1 TIMER/DISPLAY, CN1 Page 3-40
CN2 UNSW 48V UNSW 12V MOTOR 12V GND GND UNSW 6V GND(M) MOTOR 17V
CN3
Q7 2SB1425(EU)
Q8 2SC1740S
R41 22 1/4W
D24 11ES2
C34 22/63
ICP-N38 CP5
C35 100/16
C37 100/16
TP2 SW12V
CP4 ICP-N38
C36 100/6.3
R40 10K
R52 2.2K
C38 100/10
C39 2200/10
R51 1K
R39 1K
TP3 GND
CP3 ICP-N20
D25
R31 1K
R32 10K
Q9 2SB941P
R33 220
R38 4.7K
Q12
C51 47/16
TP1 SW5V
C40 0.01/50
Q10 2SC1740S(Q)
Q11
D26 UZ5.1BSC
R34 8.2K
R37 470
C41 100/6.3
R35 470
R36 10K
R37 SWD 5V
C43 0.01/50
REG 5V IC2
C44 100/6.3
IC2 UPC24M05HF
Q11 2SC1740S
Q12 2SA933S
CN4
CN801
UNSW 48V MOTOR 17V MOTOR 12V GND(M) GND GND UNSW 12V UNSW 5.8V SWD 12V POWER ON/OFF SWD 5V VPT 5V
EG ONLY K3 K2
RA1 SWD 12V
RA2 GND
To 0 3 AUDIO Page 3-24
RM7 MOTOR 17V
RM1 MOTOR 12V
RM5 GND(M)
RM6 GND
RM4 UNSW 12V
RM2 UNSW 5.8V
RM1 POWER ON/OFF
RM3 SWD 5V
RM8 VPT 5V
Page 3-25
From/To 0 3 MECHACON
To 0 3 SERVO
RS3 SWD 5V
RS4 GND
RS1 MOTOR 12V
RS5 GND(M)
Page 3-22
K1 EG ONLY
L851 10
RV8 UNSW 12V
RV1 SWD 5V
RV3 GND
RV7 48V
RV4 UNSW 12V
RV2 SWD 12V
R851 39K
L853 100
RV5 SWD 12V
Page 3-32
R852 1K
D853
VR1 PB
D851
D852
RV6 PB 12V
Q851 2SB810H, J
From/To 0 3 VIDEO
A B C D E F G H
1 2 3 4 5 6

3.10 SWITCHING REGULATOR CIRCUIT BOARD

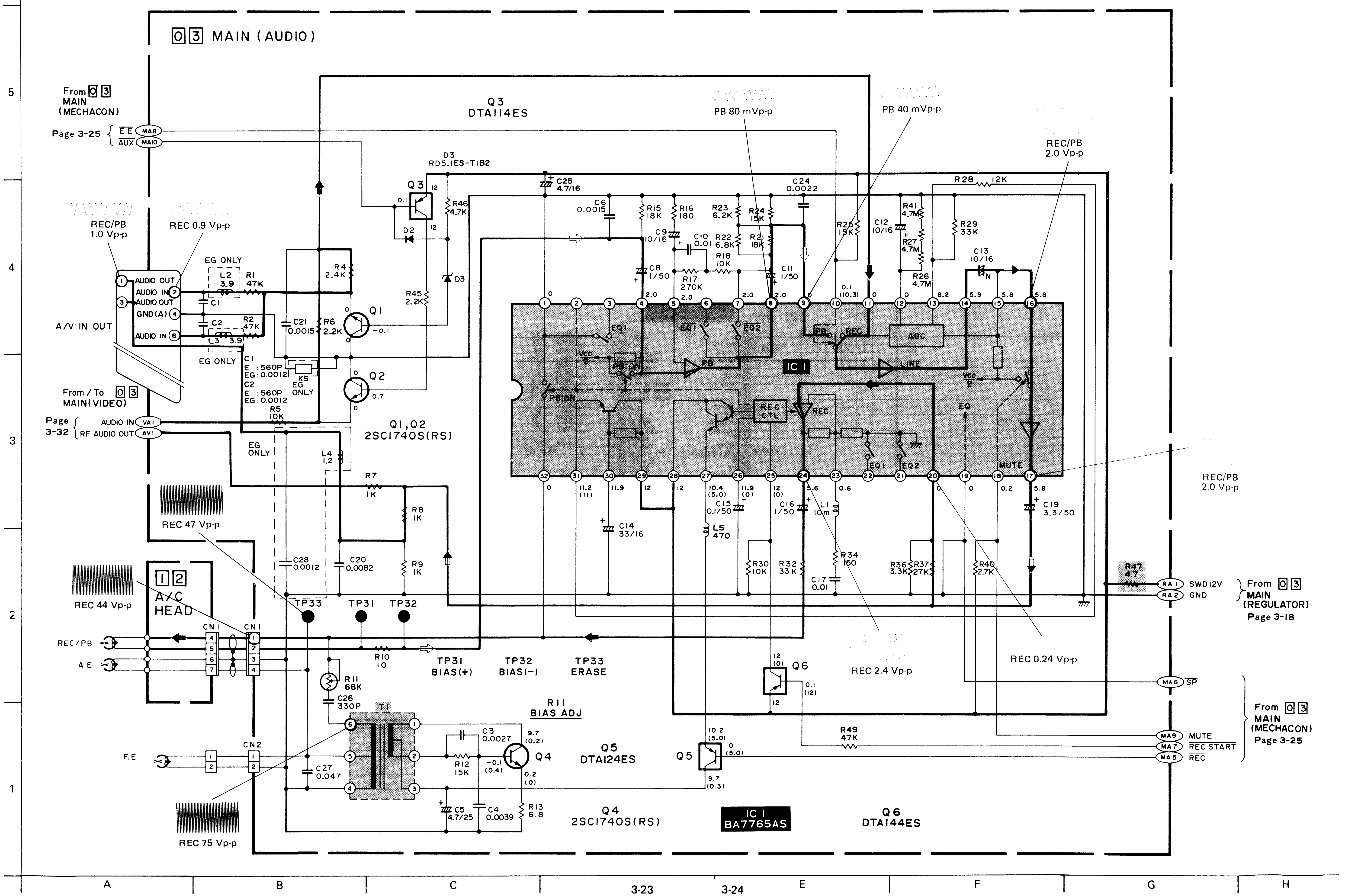

5V DC
P.SUPPLY PWB
PB20439 -01-02
REGULATOR PWB ASS'Y
PB20439
SW.REG PWB ASS'Y
437 V0
F1 T1A
BLUE
NEUTRAL
BROWN
LIVE
LF1
LF2
T1
PHC1
IC1
IC2
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN9
TP1
TP2
TP3
A
B
1
2
3
4
5
6
A
B
C
D
E
F
G
H

3.11 SERVO SCHEMATIC DIAGRAM

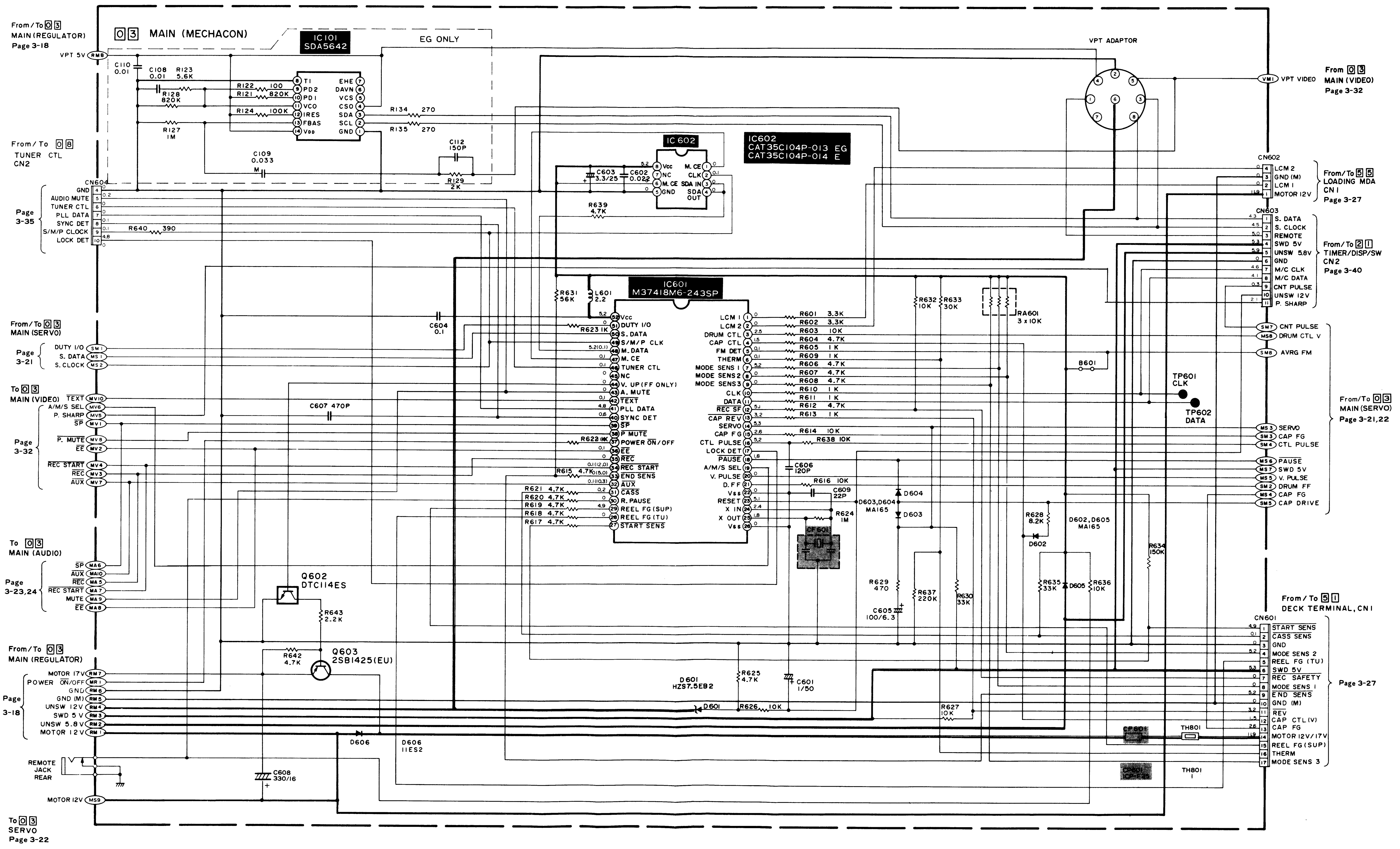


03 MAIN (SERVO)
PB 1.8 Vp-p
TP501 AVRG FM
5.2 Vp-p
5.2 Vp-p
From 03 MAIN (VIDEO) Page 3-32
PB COL VS3
C507 0.01
From/To 03 MAIN (MECHACON) Page 3-25,26
AVRG FM SM8
CTL PULSE SM4
CAP FG SM3
S CLOCK MS2
S DATA MS1
D408
D407
REC 5.0 Vp-p
COUNT DOWN
COUNT DOWN
SERIAL DECODER
FUNCTION MODE
NTSC MODE
SYNC SEP
V. P ON
DRUM & V PULSE GEN.
DRUM START
SP
V. FM
From/To 03 MAIN (VIDEO) Page 3-32
SYNC VS2
R435 1K
V PULSE ON SV5
V PULSE SV4
YNP PULSE SV3
DRUM FF SV2
R434 1K
5.2 Vp-p
TP411 DRUM FF
To 03 MAIN (MECHACON)
From 03 MAIN (VIDEO) Page 3-32
DRUM FF SM2
3Fsc VS1
C423 0.001
0.8 Vp-p
CLK
REC/PB CTL GEN. INDEX DET
From/To 03 MAIN (MECHACON) Page 3-25,26
DUTY I/O SM1
CNT PULSE SM7
C421 0.001
CAP FG MS4
R430 1K
C419 0.001
TP401
C422 0.056
C420 1/50
R429 1K
C418 560P
PB 2.3 Vp-p
TP401 CTL PULSE
R428 1M
C417 270P
R439 10K
C416 22/10
C415 22/10
R427 1K
CTL AMP
SW1
SW3
SW4
SW2
REC
PB
Vcc/2
AMP
C414 0.001
R426 820
R440 470K
12 A/CTL HEAD
CN1
CN402
CTL
3.4 Vp-p
Q402 2SA1309(QRS)
R441 82K
IC 401 HD49733NT
DRUM PHASE DET
DRUM CAP REF
CAP PHASE DET
CAP F-V CONV
DIF AMP
DRUM F-V CONV
DIF AMP
SW11
SW9
SW10
SW8
SW7
SW6
SW5
Vcc/2
4.2 Vp-p
DRUM SEL A
DRUM SEL B
2.8 Vp-p
R413 27K
R412 27K
R411 1M
R414 3.3M
C409 0.022
R437 270K
R436 270K
R415 330K
C410 0.18
D409
D410
2.8 Vp-p
R438 220K
R408 1M
R409 27K
R407 3.9K
R406 4.7K
R405 12K
C403 0.22
2.8 Vp-p
R402 2.2M
R401 22K
R403 68K
C404 0.0068
C402 22/10
C401 0.01
2.8 Vp-p
2.8 Vp-p
2.8 Vp-p
REC 6.2 Vp-p
REC 6.8 Vp-p
L501 27
R501 1K
C502 0.01
C504 0.1
C505 0.01
AMP
S/H
V C A
TIM
OUT
V / I
IC501 BA7039
C506 0.068
R508 120K
C509 0.01
C508 22/10
R503 2.7K
TP603 D.START
C427 180P
R422 100K
C412 0.0068
R419 47K
R420 680K
R420 SP SW POINT
R502 3.3K
C411 470P
R416 8.2K
D404
R418 1K
C408 10/16
C407 10/16
D403
C406 4.7/25
C405 4.7/25
R404 2.2K
D401
D402
MS5 V PULSE
From 03 MAIN (MECHACON) Page 3-26
RS4 GND
RS3 SWD 5V
RS5 GND (M)
RS1 MOTOR 12V
From 03 MAIN (REGULATOR) Page 3-18
ICP401 ICP-F15
CN401
1 MOTOR 12V
2 GND (M)
3 DRUM FG/PG
4 DRUM DRIVE
From/To 58 DRUM MOTOR, CN1
MS9 MOTOR 12V
MS7 SWD 5V
MS8 DRUM CTL V
MS3 SERVO
MS5 CAP DRIVE
MS6 PAUSE
From/To 03 MAIN (MECHACON) Page 3-25,26
6
5
4
3
2
1
A
B
C
E
F
G
H

3.12 AUDIO SCHEMATIC DIAGRAM

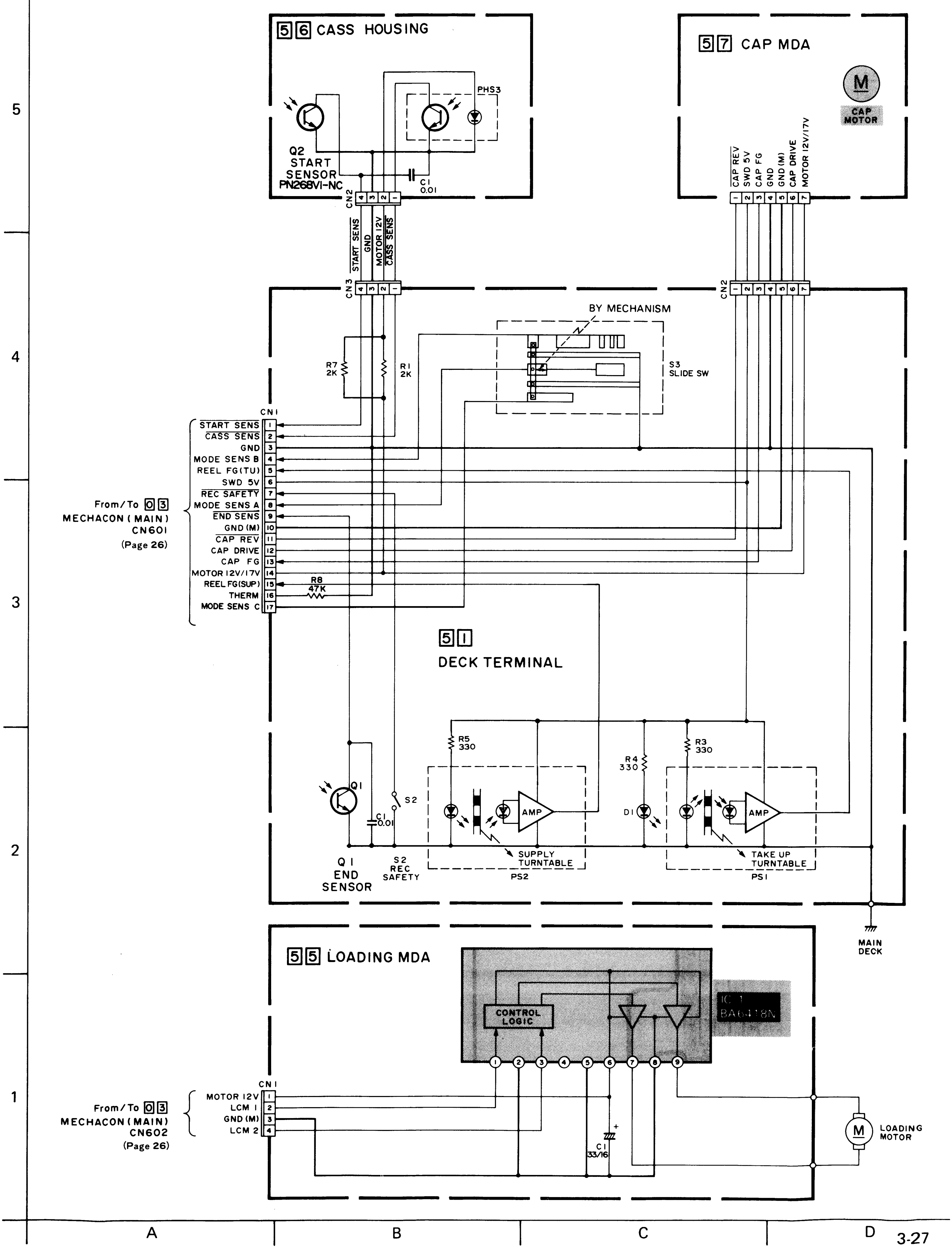

03 MAIN (AUDIO)
From 03 MAIN (MECHACON)
Page 3-25
EE MA8
AUX MA10
Q3 DTA114ES
D3 RD5.1ES-T1B2
REC/PB 1.0 Vp-p
REC 0.9 Vp-p
PB 80 mVp-p
PB 40 mVp-p
REC/PB 2.0 Vp-p
A/V IN OUT
AUDIO OUT
AUDIO IN
GND(A)
EG ONLY
L2 3.9
R1 47K
C1
C2
R2 47K
L3 3.9
C1 E : 560P EG : 0.0012
C2 E : 560P EG : 0.0012
K5 EG ONLY
R5 10K
C21 0.0015
R6 2.2K
R4 2.4K
R45 2.2K
R46 4.7K
D2
Q1
Q2
Q1, Q2 2SC1740S(RS)
From / To 03 MAIN (VIDEO)
Page 3-32
AUDIO IN VA1
RF AUDIO OUT AV1
L4 1.2
R7 1K
R8 1K
R9 1K
C28 0.0012
C20 0.0082
REC 47 Vp-p
REC 44 Vp-p
12 A/C HEAD
CN1
REC/PB
A E
F.E
CN2
TP33
TP31
TP32
R10 10
TP31 BIAS(+)
TP32 BIAS(−)
TP33 ERASE
R11 68K
C26 330P
T1
R11 BIAS ADJ
C3 0.0027
R12 15K
Q4
C5 4.7/25
C4 0.0039
R13 6.8
C27 0.047
REC 75 Vp-p
Q5 DTA124ES
Q4 2SC1740S(RS)
IC1 BA7765AS
Q6 DTA144ES
C25 4.7/16
C6 0.0015
R15 18K
R16 180
C9 10/16
C10 0.01
R23 6.2K
R24 15K
R22 6.8K
R21 18K
R18 10K
C8 1/50
R17 270K
C11 1/50
C24 0.0022
R25 15K
C12 10/16
R41 4.7M
R27 4.7M
R26 4.7M
R28 12K
R29 33K
C13 10/16
IC1
EQ1
EQ2
PB
PB:ON
Vcc/2
REC
LINE
AGC
REC CTL
EQ
MUTE
C14 33/16
C15 0.1/50
L5 470
C16 1/50
L1 10m
C17 0.01
R30 10K
R32 33K
R34 150
R36 3.3K
R37 27K
R40 2.7K
C19 3.3/50
R47 4.7
SWD12V RA1
GND RA2
From 03 MAIN (REGULATOR)
Page 3-18
REC 2.4 Vp-p
REC 0.24 Vp-p
REC/PB 2.0 Vp-p
SP MA6
MUTE MA9
REC START MA7
REC MA5
From 03 MAIN (MECHACON)
Page 3-25
R49 47K
Q5
Q6
6
5
4
3
2
1
A
B
C
D
E
F
G
H

3.13 SYSTEM CTL SCHEMATIC DIAGRAM



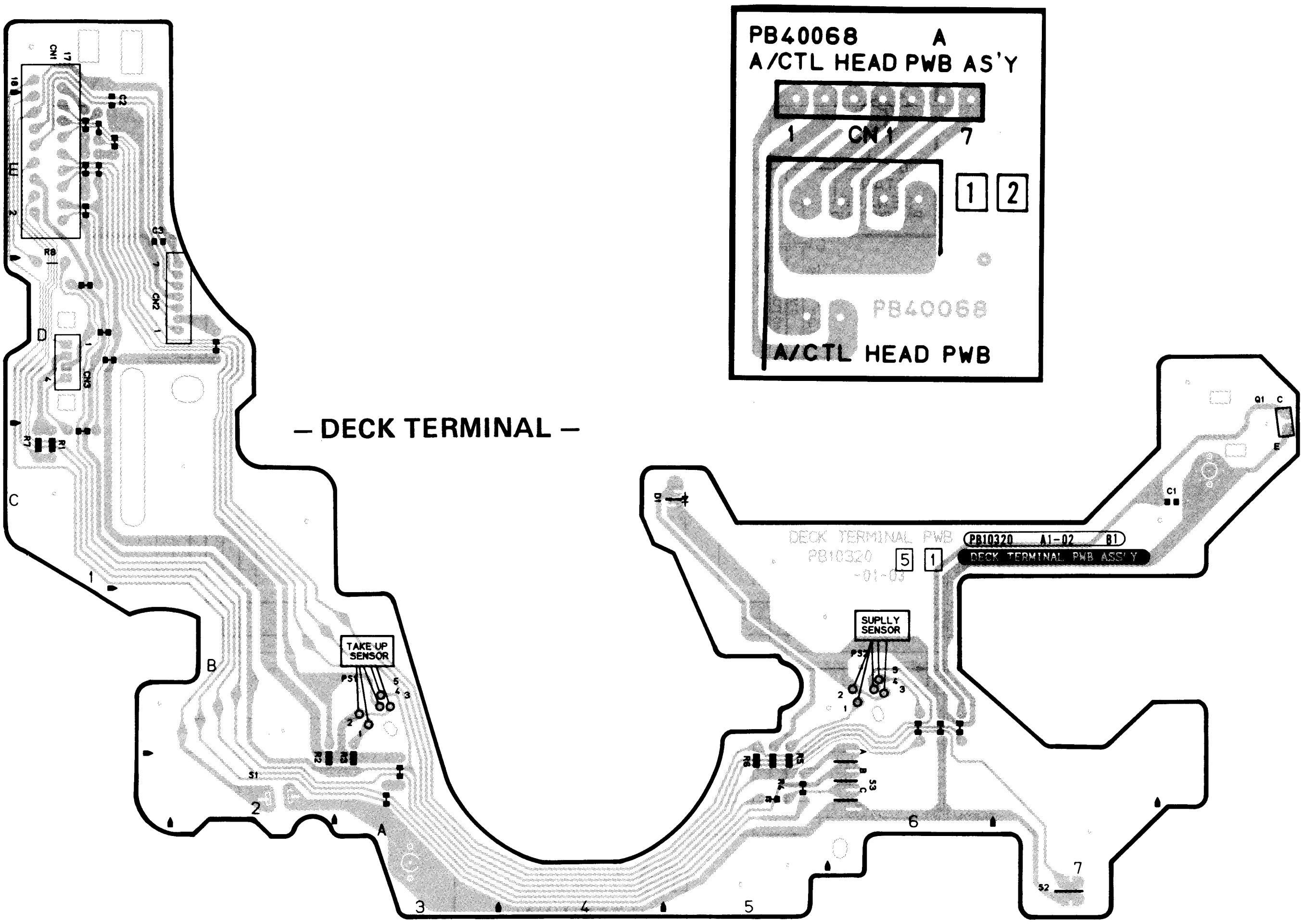
From/To 03 MAIN (REGULATOR) Page 3-18
VPT 5V RM8
03 MAIN (MECHACON)
IC101 SDA5642
EG ONLY
VPT ADAPTOR
VM1 VPT VIDEO
From 03 MAIN (VIDEO) Page 3-32
C110 0.01
C108 0.01
R123 5.6K
R128 820K
R127 1M
R122 100
R121 820K
R124 100K
T1
PD2
PD1
VCO
IRES
FBAS
VDD
EHE
DAVN
VCS
CSO
SDA
SCL
GND
R134 270
R135 270
C109 0.033
C112 150P
R129 2K
From/To 08 TUNER CTL CN2
CN604
GND
AUDIO MUTE
TUNER CTL
PLL DATA
SYNC DET
S/M/P CLOCK
LOCK DET
Page 3-35
R640 390
IC602
IC602 CAT35C104P-013 EG CAT35C104P-014 E
C603 3.3/25
C602 0.022
Vcc
NC
M.CE
GND
M.CE
CLK
SDA IN
SDA OUT
R639 4.7K
CN602
LCM 2
GND (M)
LCM 1
MOTOR 12V
From/To 55 LOADING MDA CN1 Page 3-27
CN603
S. DATA
S. CLOCK
REMOTE
SWD 5V
UNSW 5.8V
GND
M/C CLK
M/C DATA
CNT PULSE
UNSW 12V
P. SHARP
From/To 21 TIMER/DISP/SW CN2 Page 3-40
IC601 M37418M6-243SP
R631 56K
L601 2.2
C604 0.1
R623 1K
Vcc
DUTY I/O
S. DATA
S/M/P CLK
M. DATA
M. CE
TUNER CTL
NC
V. UP (FF ONLY)
A. MUTE
TEXT
PLL DATA
SYNC DET
SP
P MUTE
POWER ON/OFF
EE
REC
REC START
END SENS
AUX
CASS
R. PAUSE
REEL FG (SUP)
REEL FG (TU)
START SENS
R622 1K
R615 4.7K
R621 4.7K
R620 4.7K
R619 4.7K
R618 4.7K
R617 4.7K
LCM 1
LCM 2
DRUM CTL
CAP CTL
FM DET
THERM
MODE SENS 1
MODE SENS 2
MODE SENS 3
CLK
DATA
REC SF
CAP REV
SERVO
CAP FG
CTL PULSE
LOCK DET
PAUSE
A/M/S SEL
V. PULSE
D. FF
Vss
RESET
X IN
X OUT
Vss
R601 3.3K
R602 3.3K
R603 10K
R604 4.7K
R605 1K
R609 1K
R606 4.7K
R607 4.7K
R608 4.7K
R610 1K
R611 1K
R612 4.7K
R613 1K
R614 10K
R638 10K
R632 10K
R633 30K
RA601 3 x 10K
C606 120P
R616 10K
C609 22P
R624 1M
CF601
D603,D604 MA165
D604
D603
B601
TP601 CLK
TP602 DATA
R628 8.2K
D602
D602,D605 MA165
R634 150K
R629 470
R637 220K
R630 33K
C605 100/6.3
R635 33K
D605
R636 10K
SM7 CNT PULSE
MS8 DRUM CTL V
SM8 AVRG FM
From/To 03 MAIN (SERVO) Page 3-21,22
MS3 SERVO
SM3 CAP FG
SM4 CTL PULSE
MS6 PAUSE
MS7 SWD 5V
MS5 V. PULSE
SM2 DRUM FF
MS4 CAP FG
SM5 CAP DRIVE
From/To 03 MAIN (SERVO)
DUTY I/O SM1
S. DATA MS1
S. CLOCK MS2
Page 3-21
To 03 MAIN (VIDEO)
TEXT MV10
A/M/S SEL MV6
P. SHARP MV5
SP MV1
P. MUTE MV8
EE MV2
REC START MV4
REC MV3
AUX MV7
Page 3-32
C607 470P
To 03 MAIN (AUDIO)
SP MA6
AUX MA10
REC MA5
REC START MA7
MUTE MA9
EE MA8
Page 3-23,24
Q602 DTC114ES
R643 2.2K
R642 4.7K
Q603 2SB1425(EU)
From/To 03 MAIN (REGULATOR)
MOTOR 17V RM7
POWER ON/OFF MR1
GND RM6
GND (M) RM5
UNSW 12V RM4
SWD 5V RM3
UNSW 5.8V RM2
MOTOR 12V RM1
Page 3-18
D601 HZS7.5EB2
R625 4.7K
C601 1/50
D601
R626 10K
R627 10K
D606
D606 11ES2
C608 330/16
REMOTE JACK REAR
MOTOR 12V MS9
To 03 SERVO Page 3-22
From/To 51 DECK TERMINAL, CN1
CN601
START SENS
CASS SENS
GND
MODE SENS 2
REEL FG (TU)
SWD 5V
REC SAFETY
MODE SENS 1
END SENS
GND (M)
REV
CAP CTL (V)
CAP FG
MOTOR 12V/17V
REEL FG (SUP)
THERM
MODE SENS 3
Page 3-27
TH801
TH801 1

3.14 DECK TERMINAL, MODE MOTOR, CAPSTAN MDA, C. HOUSING SCHEMATIC DIAGRAM



6
5
4
3
2
1
56 CASS HOUSING
PHS3
Q2
START
SENSOR
PN268VI-NC
C1
0.01
CN2
4 3 2 1
START SENS
GND
MOTOR 12V
CASS SENS
CN3
57 CAP MDA
M
CAP MOTOR
CAP REV
SWD 5V
CAP FG
GND
GND (M)
CAP DRIVE
MOTOR 12V/17V
CN2
1 2 3 4 5 6 7
BY MECHANISM
S3
SLIDE SW
R7
2K
R1
2K
CN1
START SENS
CASS SENS
GND
MODE SENS B
REEL FG(TU)
SWD 5V
REC SAFETY
MODE SENS A
END SENS
GND (M)
CAP REV
CAP DRIVE
CAP FG
MOTOR 12V/17V
REEL FG(SUP)
THERM
MODE SENS C
From/To 03
MECHACON (MAIN)
CN601
(Page 26)
R8
47K
51
DECK TERMINAL
R5
330
R4
330
R3
330
Q1
S2
C1
0.01
AMP
D1
AMP
SUPPLY
TURNTABLE
PS2
TAKE UP
TURNTABLE
PS1
Q 1
END
SENSOR
S2
REC
SAFETY
MAIN
DECK
55 LOADING MDA
CONTROL
LOGIC
IC 1
BA6418N
1 2 3 4 5 6 7 8 9
CN1
MOTOR 12V
LCM 1
GND (M)
LCM 2
From/To 03
MECHACON (MAIN)
CN602
(Page 26)
C1
33/16
M
LOADING
MOTOR
A
B
C
D

3.15 DECK TERMINAL, MODE MOTOR, C. HOUSING, A/C HEAD CIRCUIT BOARDS

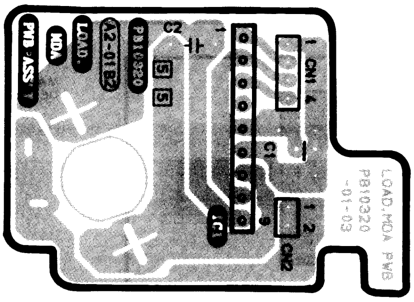


– A/C HEAD –

– DECK TERMINAL –

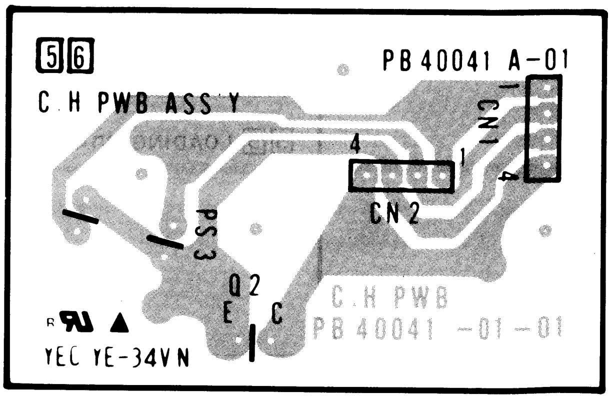
PB40068 A
A/CTL HEAD PWB AS'Y
CN1
1
7
1 2
PB40068
A/CTL HEAD PWB
DECK TERMINAL PWB
PB10320
-01-03
5 1
PB10320 A1-02 B1
DECK TERMINAL PWB ASS'Y
TAKE-UP SENSOR
SUPLLY SENSOR
PS1
PS2
CN1
CN2
CN3
Q1
C1
D1
S1
S2
S3
A
B
C
D
1
2
3
4
5
6
7

– MDA –



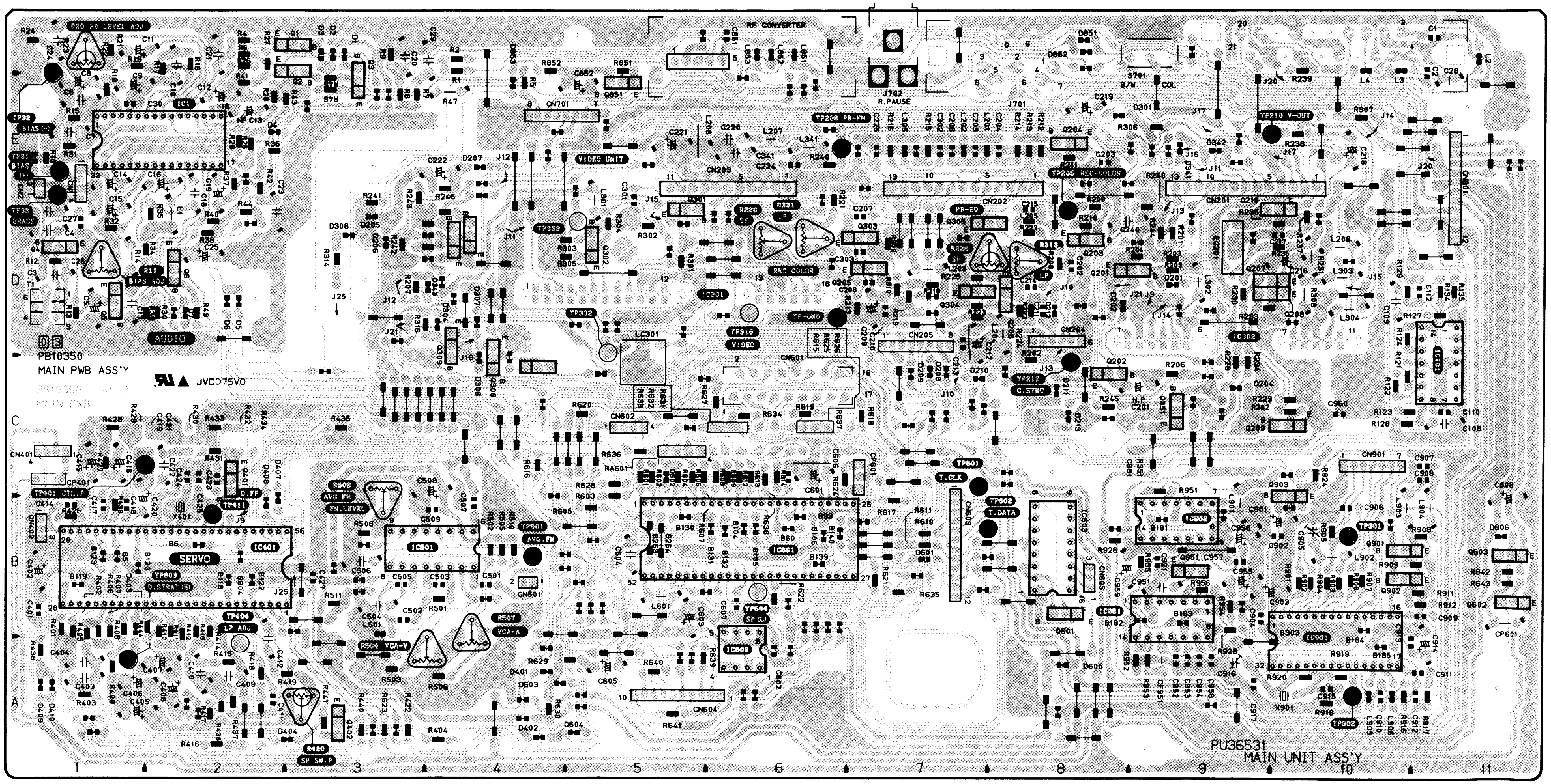
PWB ASS'Y
MDA
LOAD
A2-01B2
PB10320
5 5
C2
CN1
C1
IC1
CN2
LOAD.MDA PWB
PB10320
-01-03

– CASSETTE HOUSING –



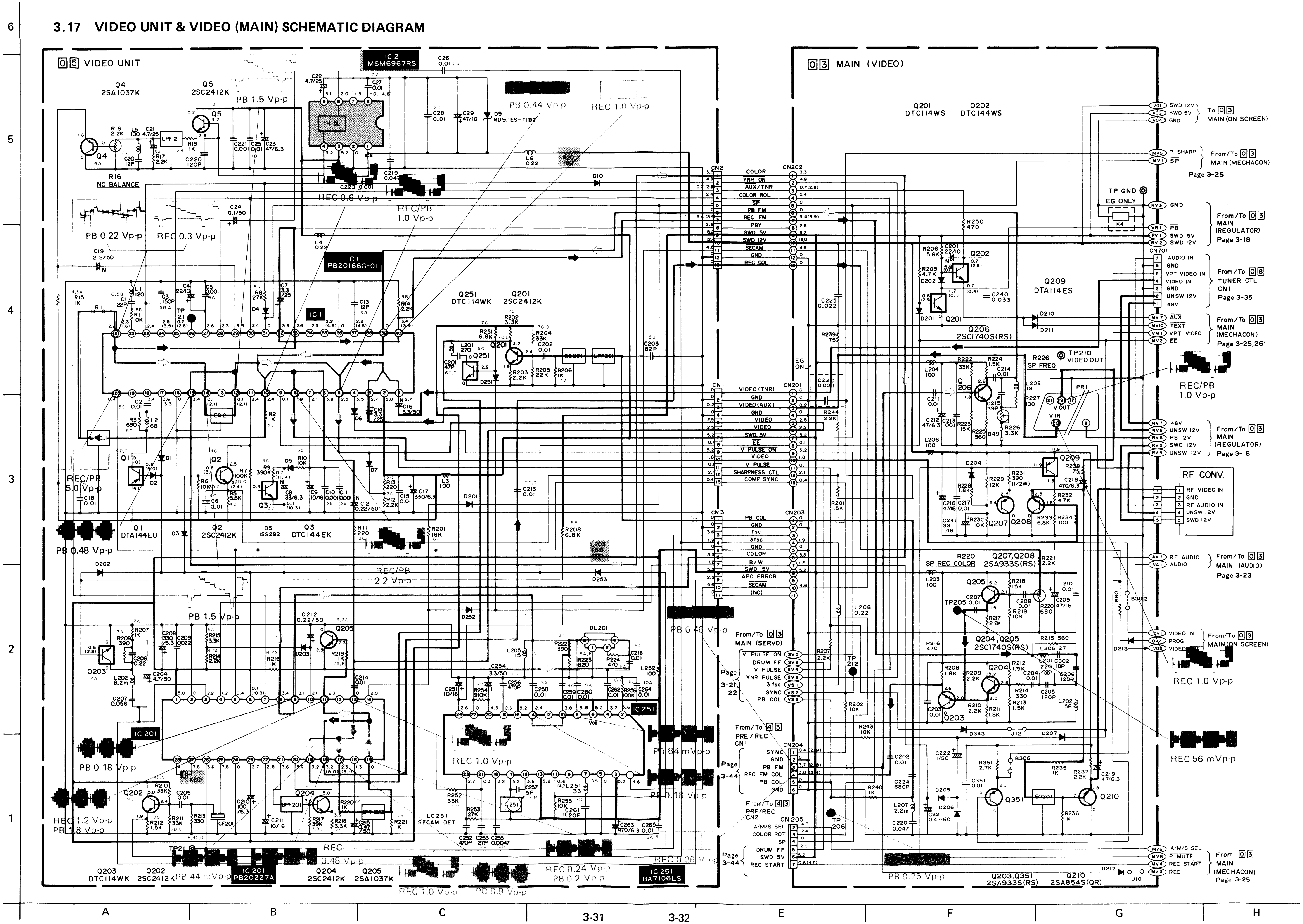
5 6
PB 40041 A-01
C.H PWB ASS'Y
CN1
CN2
1
4
PS3
Q2
E
C
YEC YE-34VN
C.H PWB
PB 40041 -01-01

3.16 MAIN CIRCUIT BOARD



R20 PB LEVEL ADJ
RF CONVERTER
J702
R.PAUSE
S701
B/W
COL
J701
IC1
TP32
BIAS(-)
TP31
BIAS(+)
TP33
ERASE
R11
BIAS ADJ
AUDIO
VIDEO UNIT
CN701
CN203
CN202
CN201
CN801
TP206 PB-FM
TP210 V-OUT
TP205 REC-COLOR
R220
SP
R331
LP
REC-COLOR
PB-EQ
R226
R313
IC301
TP332
TP333
TP316
VIDEO
TP-GND
LC301
CN601
CN205
CN204
TP212
C.SYNC
IC302
IC101
03
PB10350
MAIN PWB ASS'Y
JVCD75V0
CN401
CN402
TP401 CTL.P
TP411
D.FF
X401
SERVO
IC401
TP603
D.STRAT(H)
TP404
LP ADJ
R420
SP SW.P
R509
AVG FM
FM.LEVEL
IC501
TP501
AVG.FM
CN501
R504 VCA-V
R507
VCA-A
CN602
IC601
IC602
TP604
SP (L)
CN604
TP601
T.CLK
TP602
T.DATA
CN603
IC603
CN605
IC951
IC952
IC901
CN901
TP901
TP902
X901
CP601
PU36531
MAIN UNIT ASS'Y
1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E

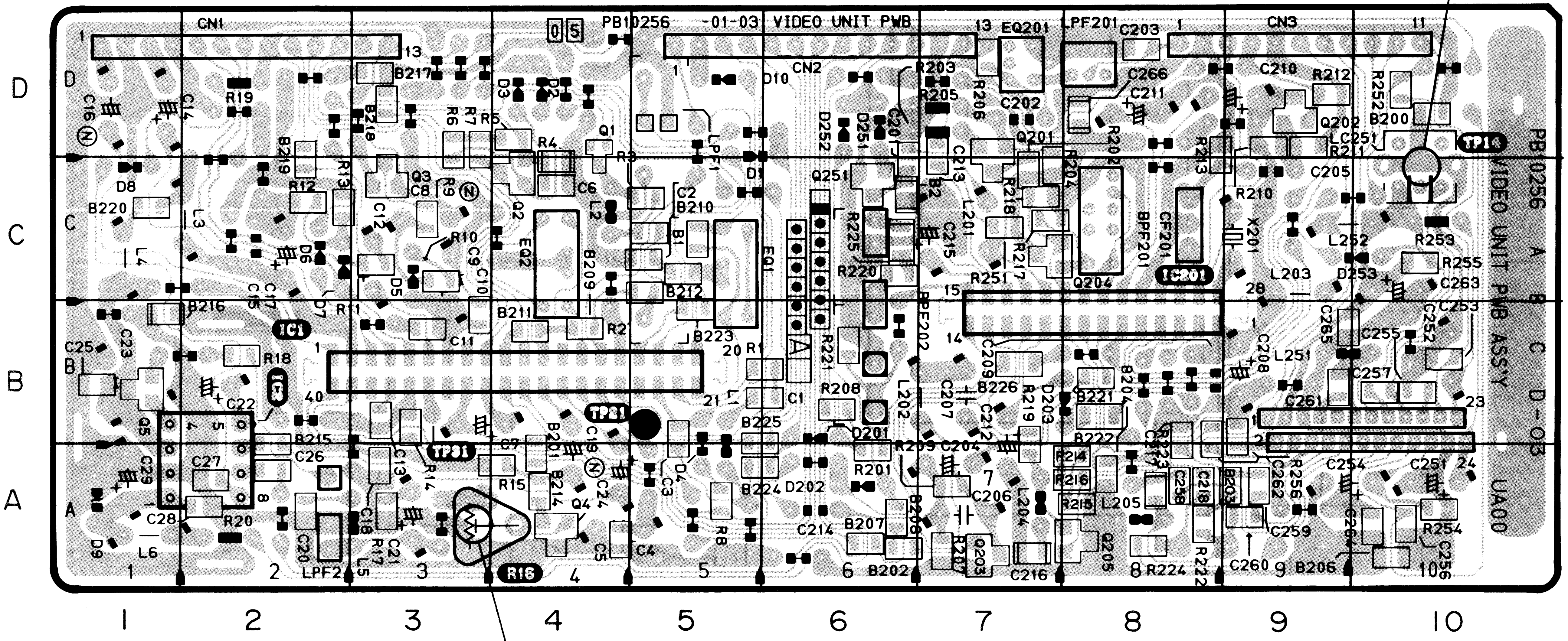
3.17 VIDEO UNIT & VIDEO (MAIN) SCHEMATIC DIAGRAM



05 VIDEO UNIT
03 MAIN (VIDEO)
IC 2 MSM6967RS
IC 1 PB20166G-01
IC 201 PB20227A
IC 251 BA7106LS
Q4 2SA1037K
Q5 2SC2412K
Q1 DTA144EU
Q2 2SC2412K
Q3 DTC144EK
D5 1SS292
Q251 DTC114WK
Q201 2SC2412K
Q203 DTC114WK
Q202 2SC2412K
Q204 2SC2412K
Q205 2SA1037K
Q201 DTC114WS
Q202 DTC144WS
Q209 DTA114ES
Q206 2SC1740S(RS)
Q207,Q208 2SA933S(RS)
Q204,Q205 2SC1740S(RS)
Q203,Q351 2SA933S(RS)
Q210 2SA854S(QR)
R16 NC BALANCE
PB 1.5 Vp-p
PB 0.44 Vp-p
REC 1.0 Vp-p
REC 0.6 Vp-p
REC/PB 1.0 Vp-p
PB 0.22 Vp-p
REC 0.3 Vp-p
REC/PB 5.0 Vp-p
PB 0.48 Vp-p
REC/PB 2.2 Vp-p
PB 0.46 Vp-p
PB 0.18 Vp-p
PB 84 mVp-p
REC 1.2 Vp-p
PB 1.8 Vp-p
PB 44 mVp-p
REC 0.24 Vp-p
PB 0.2 Vp-p
REC 0.26 Vp-p
PB 0.9 Vp-p
PB 0.25 Vp-p
REC 56 mVp-p
REC 1.0 Vp-p
LC 251 SECAM DET
DL 201
CN2
CN202
COLOR
YNR ON
AUX/TNR
COLOR ROL
SP
PB FM
REC FM
PBY
SWD 5V
SWD 12V
SECAM
GND
REC COL
CN1
CN201
VIDEO (TNR)
GND
VIDEO (AUX)
GND
VIDEO
VIDEO
SWD 5V
EE
V PULSE ON
VIDEO
V PULSE
SHARPNESS CTL
COMP SYNC
CN3
CN203
PB COL
GND
fsc
3fsc
GND
COLOR
B/W
SWD 5V
APC ERROR
SECAM
(NC)
EG ONLY
From/To 03 MAIN (SERVO)
V PULSE ON
DRUM FF
V PULSE
YNR PULSE
3 fsc
SYNC
PB COL
Page 3-21, 22
From/To 43 PRE / REC CN1
CN204
SYNC
GND
PB FM
REC FM COL
PB COL
GND
Page 3-44
From/To 43 PRE/REC CN2
CN 205
A/M/S SEL
COLOR ROT
SP
DRUM FF
SWD 5V
REC START
Page 3-44
TP GND
EG ONLY
K4
TP210 VIDEO OUT
R226 SP FREQ
R220 SP REC COLOR
PR1
V OUT
V IN
CN701
SWD 12V
SWD 5V
GND
To 03 MAIN (ON SCREEN)
P. SHARP
SP
From/To 03 MAIN (MECHACON) Page 3-25
GND
PB
SWD 5V
SWD 12V
From/To 03 MAIN (REGULATOR) Page 3-18
AUDIO IN
GND
VPT VIDEO IN
VIDEO IN
GND
UNSW 12V
48V
From/To 08 TUNER CTL CN1 Page 3-35
AUX
TEXT
VPT VIDEO
EE
From/To 03 MAIN (MECHACON) Page 3-25,26
48V
UNSW 12V
PB 12V
SWD 12V
UNSW 12V
From/To 03 MAIN (REGULATOR) Page 3-18
RF CONV.
RF VIDEO IN
GND
RF AUDIO IN
UNSW 12V
SWD 12V
RF AUDIO
AUDIO
From/To 03 MAIN (AUDIO) Page 3-23
VIDEO IN
PROG
VIDEO
From/To 03 MAIN (ON SCREEN)
A/M/S SEL
P. MUTE
REC START
REC
From 03 MAIN (MECHACON) Page 3-25
TP 21
TP205
TP 212
TP 206
6
5
4
3
2
1
A
B
C
E
F
G
H

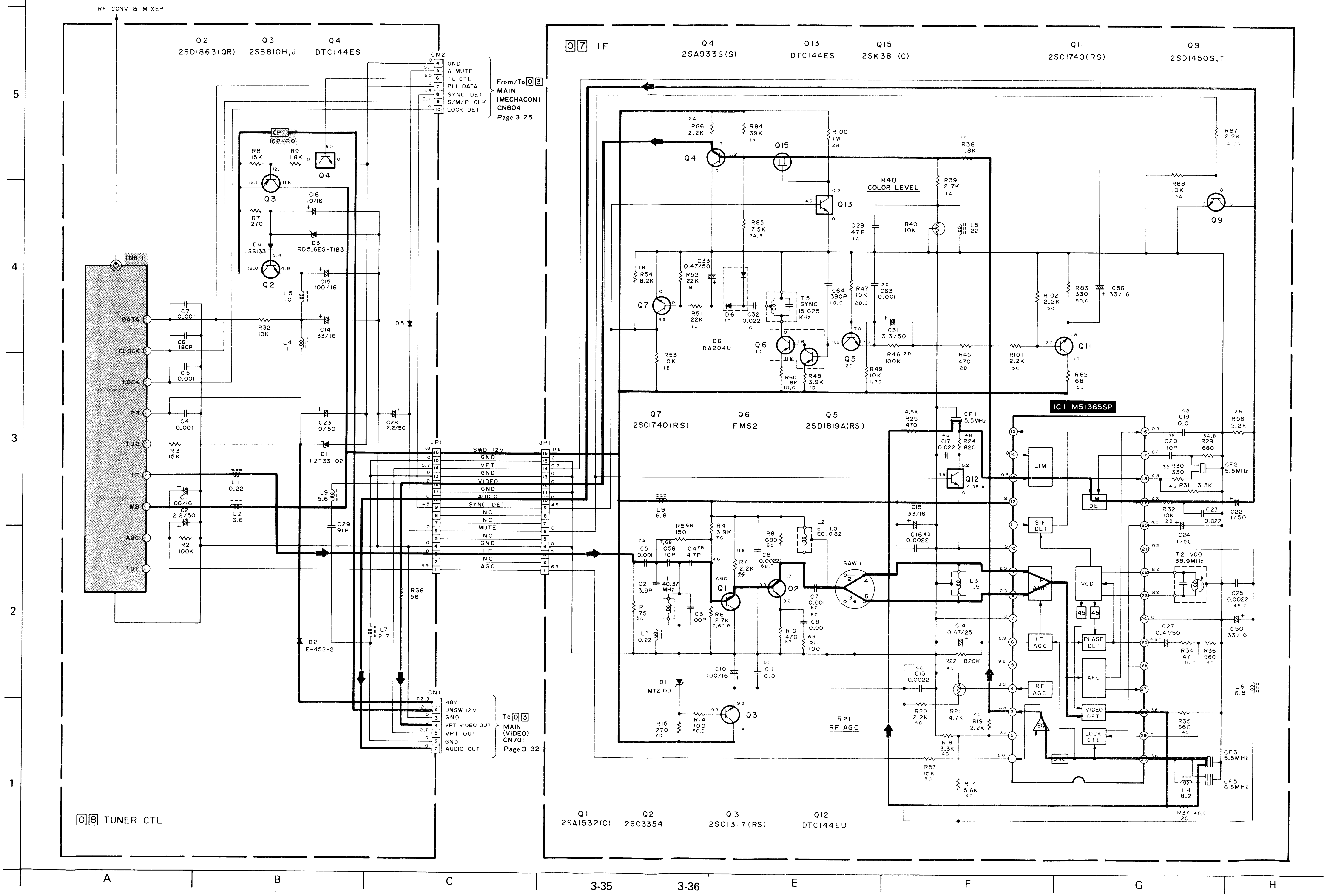
3.18 VIDEO UNIT CIRCUIT BOARD

LC251
SECAM DET


PB10256 -01-03 VIDEO UNIT PWB
CN1
CN2
CN3
IC1
IC201
TP21
TP31
TP14
EQ1
EQ2
EQ201
LPF201
BPF201
CF201
X201
R16
PB10256 A B C D-03 VIDEO UNIT PWB ASS'Y
UA00
D
C
B
A
1
2
3
4
5
6
7
8
9
10

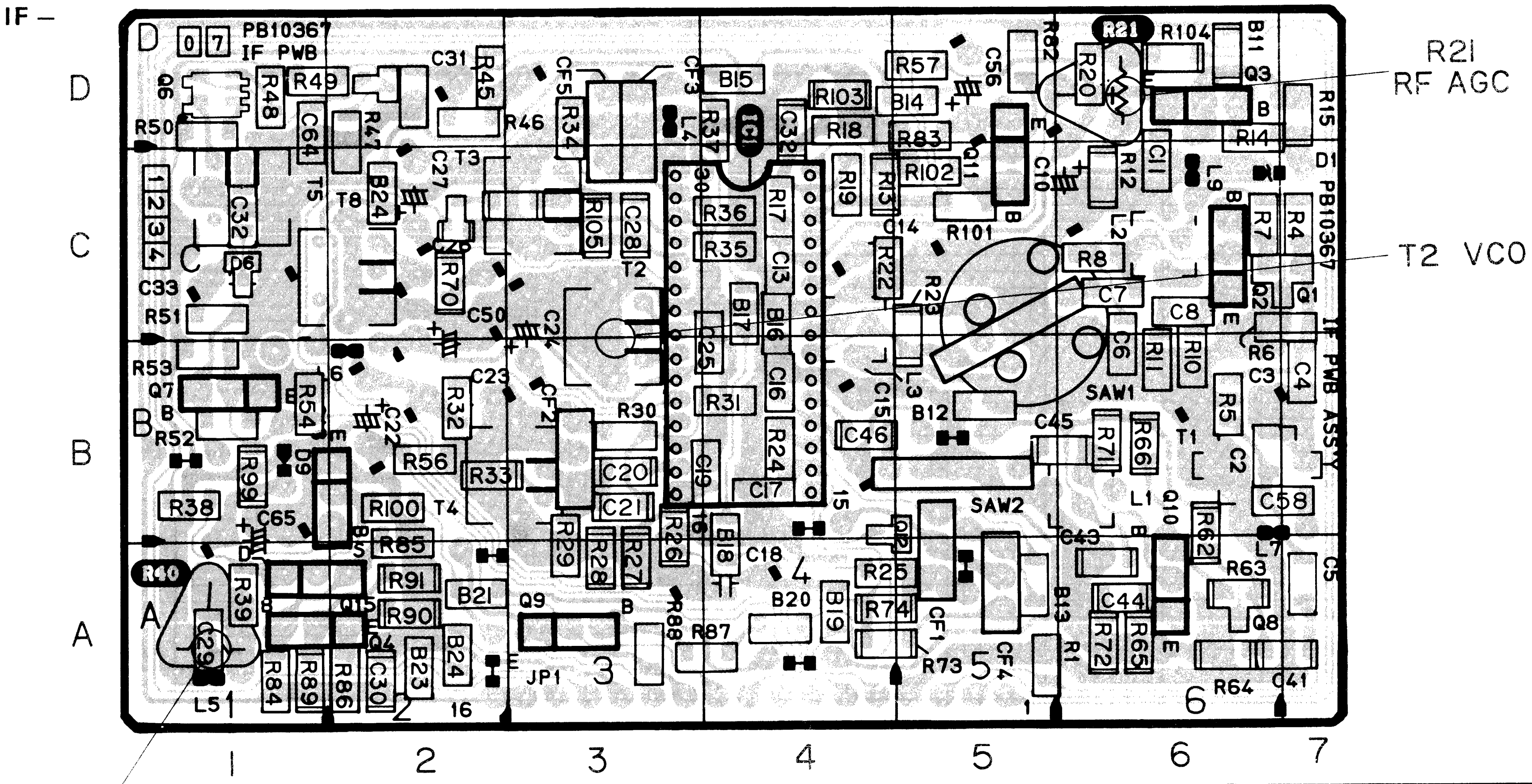
R16
NC BAL

3.19 IF & TNR CTL SCHEMATIC DIAGRAM

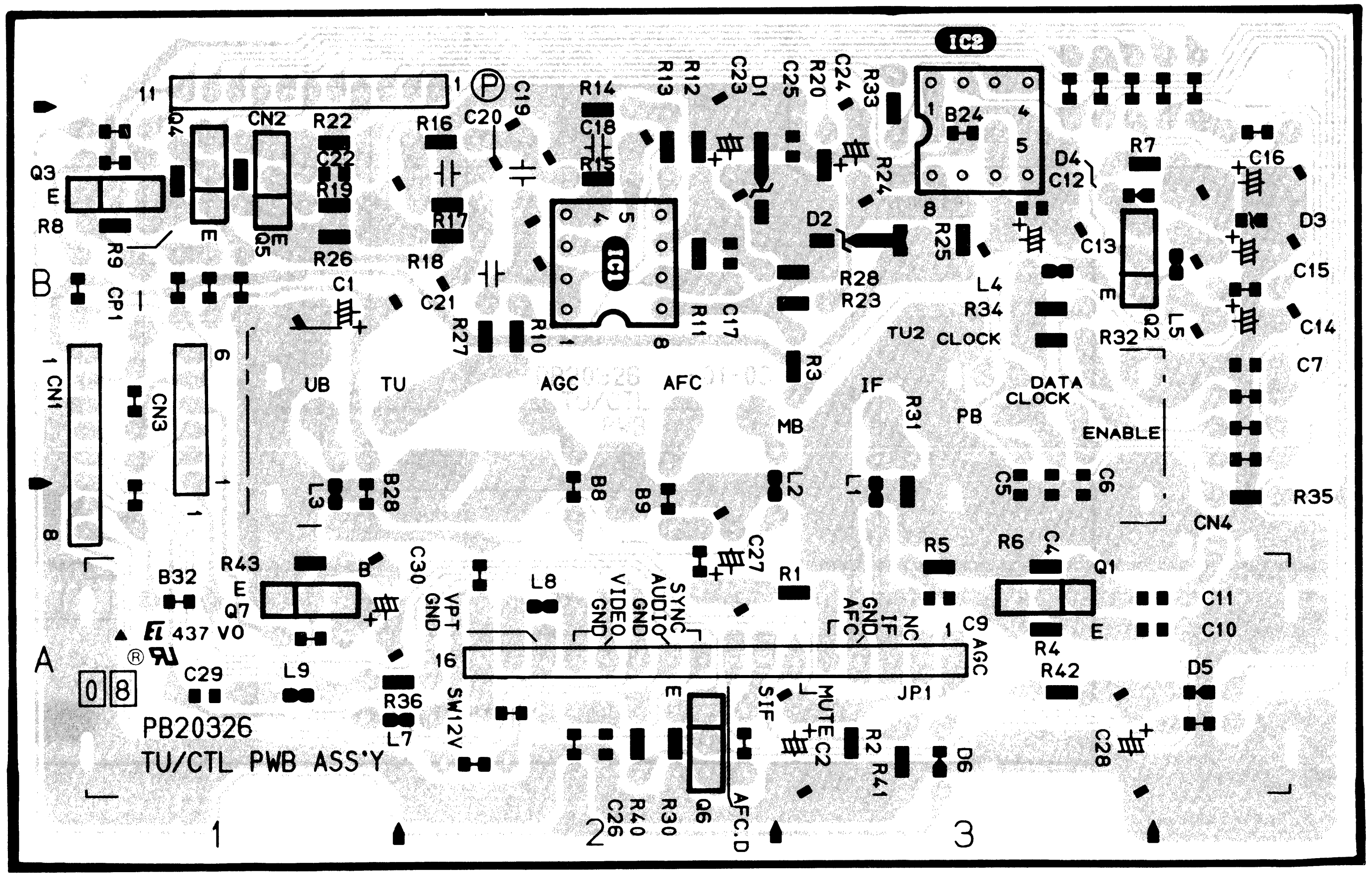

RF CONV & MIXER
Q2 2SD1863(QR)
Q3 2SB810H,J
Q4 DTC144ES
CN2
GND
A MUTE
TU CTL
PLL DATA
SYNC DET
S/M/P CLK
LOCK DET
From/To 03 MAIN (MECHACON) CN604 Page 3-25
CP1 ICP-F10
R8 15K
R9 1.8K
R7 270
C16 10/16
D4 1SS133
D3 RD5.6ES-T1B3
C15 100/16
L5 10
C14 33/16
L4 1
R32 10K
D5
TNR 1
DATA
CLOCK
LOCK
PB
TU2
IF
MB
AGC
TU1
C7 0.001
C6 180P
C5 0.001
C4 0.001
R3 15K
L1 0.22
C1 100/16
C2 2.2/50
L2 6.8
R2 100K
C23 10/50
C28 2.2/50
D1 HZT33-02
L9 5.6
C29 91P
R36 56
L7 2.7
D2 E-452-2
JP1
SWD 12V
GND
VPT
GND
VIDEO
GND
AUDIO
SYNC DET
NC
NC
MUTE
NC
GND
IF
NC
AGC
CN1
48V
UNSW 12V
GND
VPT VIDEO OUT
VPT OUT
GND
AUDIO OUT
To 03 MAIN (VIDEO) CN701 Page 3-32
08 TUNER CTL
07 IF
Q4 2SA933S(S)
Q13 DTC144ES
Q15 2SK381(C)
Q11 2SC1740(RS)
Q9 2SD1450S,T
R86 2.2K
R84 39K
R100 1M
R38 1.8K
R87 2.2K
R40 COLOR LEVEL
R39 2.7K
R88 10K
R85 7.5K
C29 47P
R40 10K
L5 22
C33 0.47/50
R54 8.2K
R52 22K
R51 22K
D6
C32 0.022
T5 SYNC 15.625 KHz
C64 390P
R47 15K
C63 0.001
R102 2.2K
R83 330
C56 33/16
Q7
D6 DA204U
Q6
C31 3.3/50
Q5
R46 100K
R45 470
R101 2.2K
R53 10K
R50 1.8K
R48 3.9K
R49 10K
R82 68
Q7 2SC1740(RS)
Q6 FMS2
Q5 2SD1819A(RS)
R25 470
CF1 5.5MHz
C17 0.022
R24 820
IC1 M51365SP
Q12
C19 0.01
R56 2.2K
C20 10P
R29 680
R30 330
CF2 5.5MHz
R31 3.3K
LIM
M DE
C22 1/50
L9 6.8
R56 150
R4 3.9K
R8 680
L2 10
C5 0.001
C58 10P
C47 4.7P
R7 2.2K
C6 0.0022
C15 33/16
C16 0.0022
SIF DET
R32 10K
C23 0.022
C24 1/50
T2 VCO 38.9MHz
SAW 1
C2 3.9P
T1 40.37 MHz
Q1
Q2
C7 0.001
C8 0.001
L3 1.5
IF AMP
VCD
C25 0.0022
R1 75
C3 100P
R6 2.7K
R10 470
R11 100
C14 0.47/25
IF AGC
PHASE DET
C27 0.47/50
R34 47
R36 560
C50 33/16
L7 0.22
C10 100/16
C11 0.01
R22 820K
C13 0.0022
RF AGC
AFC
L6 6.8
D1 MTZ10D
R20 2.2K
R21 4.7K
R19 2.2K
VIDEO DET
R15 270
R14 100
Q3
R21 RF AGC
R18 3.3K
EQ
LOCK CTL
R35 560
R57 15K
DNC
CF3 5.5MHz
R17 5.6K
L4 8.2
CF5 6.5MHz
R37 120
Q1 2SA1532(C)
Q2 2SC3354
Q3 2SC1317(RS)
Q12 DTC144EU
6
5
4
3
2
1
A
B
C
E
F
G
H

3.20 IF & TNR CTL CIRCUIT BOARD

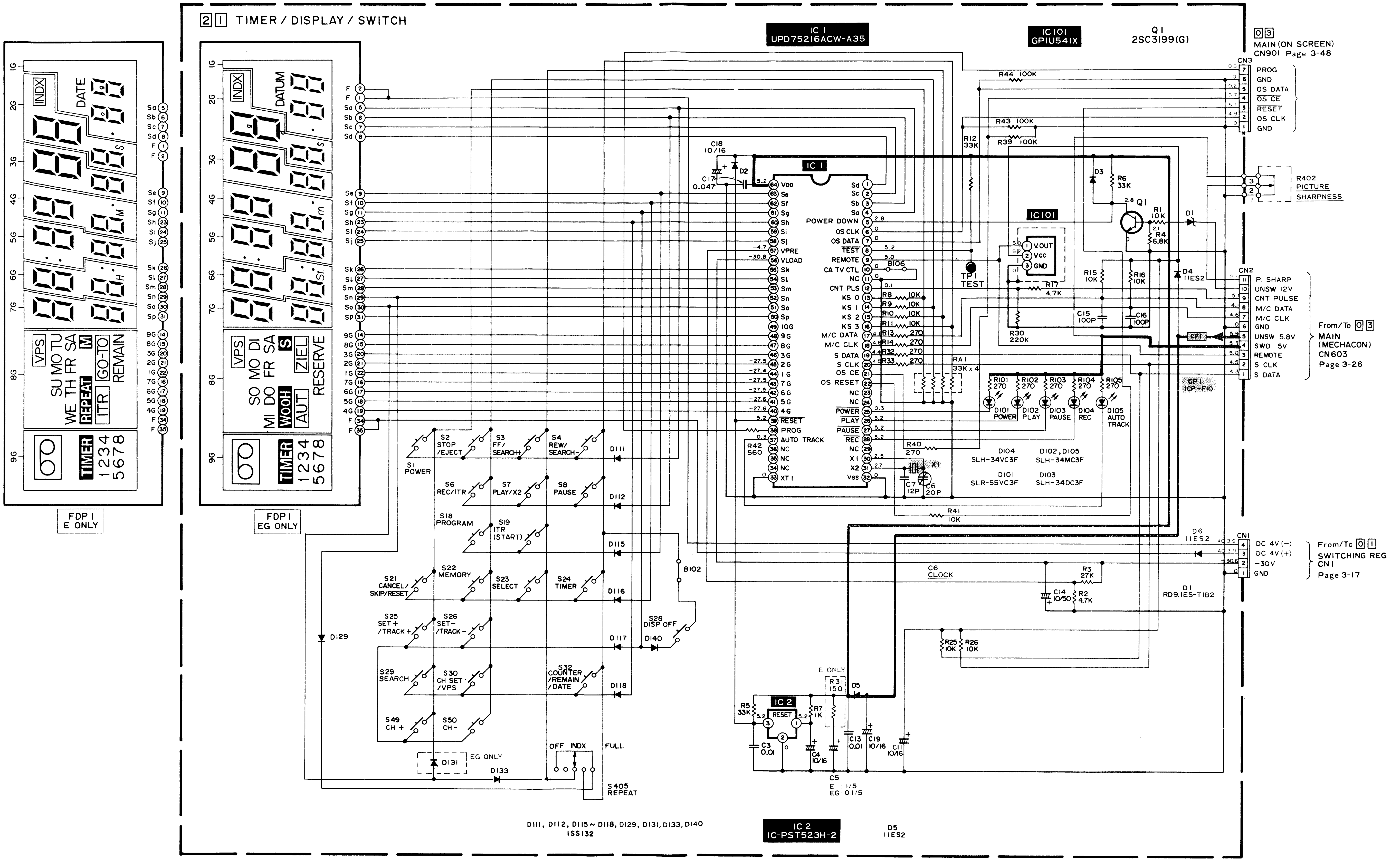
– IF –


PB10367
IF PWB
PB10367 IF PWB ASS'Y
R21
RF AGC
T2 VCO
R40
COLOR LEVEL
D
C
B
A
1
2
3
4
5
6
7

– TU/CTL –

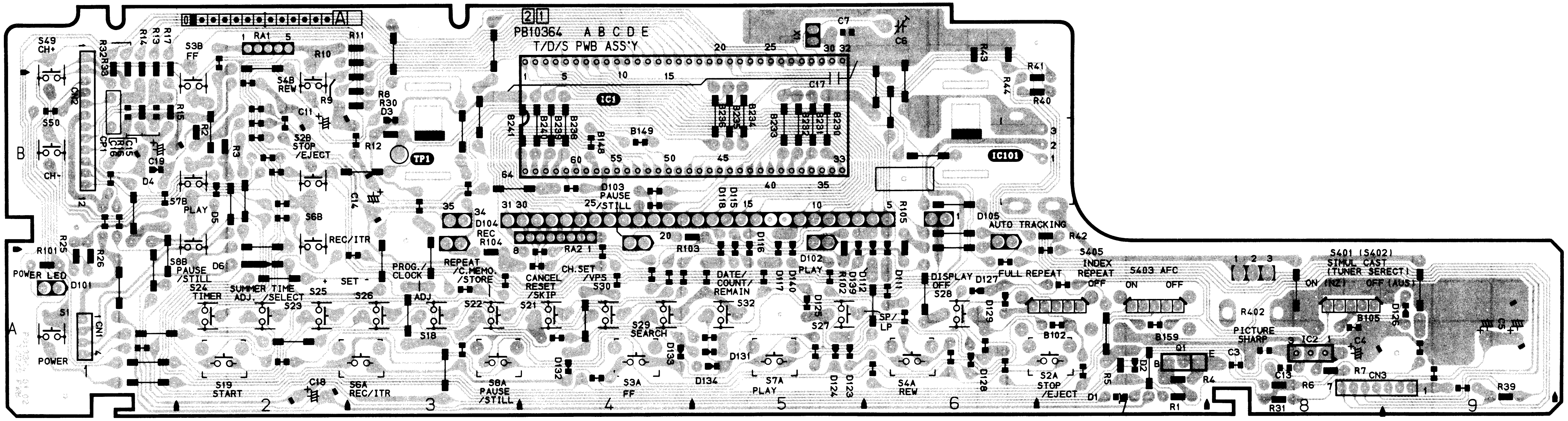

IC2
IC1
CN1
CN2
CN3
CN4
JP1
PB20326
TU/CTL PWB ASS'Y
UB
TU
AGC
AFC
TU2
CLOCK
DATA
CLOCK
ENABLE
IF
MB
PB
VPT
GND
VIDEO
GND
AUDIO
GND
SYNC
NC
IF
GND
AFC
AGC
SW12V
STF
MUTE
AFC.D
437 VO
A
B
1
2
3

3.21 TIMER/DISP/SW SCHEMATIC DIAGRAM



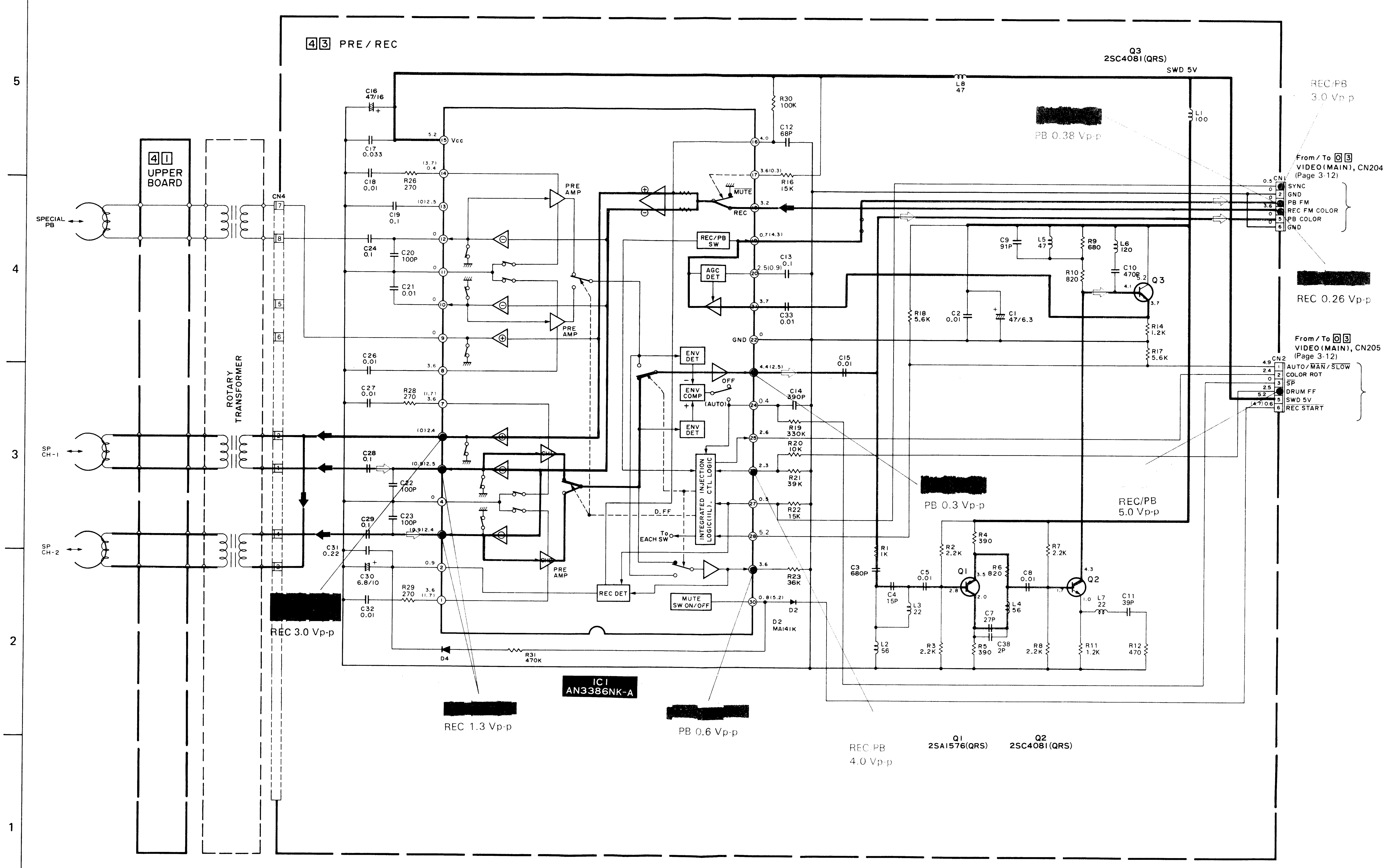
2 1 TIMER / DISPLAY / SWITCH
IC 1 UPD75216ACW-A35
IC101 GP1U541X
Q1 2SC3199(G)
0 3 MAIN (ON SCREEN) CN901 Page 3-48
CN3
PROG
GND
OS DATA
OS CE
RESET
OS CLK
GND
R402 PICTURE SHARPNESS
CN2
P. SHARP
UNSW 12V
CNT PULSE
M/C DATA
M/C CLK
GND
UNSW 5.8V
SWD 5V
REMOTE
S CLK
S DATA
From/To 0 3 MAIN (MECHACON) CN603 Page 3-26
CP1 ICP-F10
CN1
DC 4V (−)
DC 4V (+)
−30V
GND
From/To 0 1 SWITCHING REG CN1 Page 3-17
D1 RD9.1ES-T1B2
D6 11ES2
D4 11ES2
FDP1 E ONLY
FDP1 EG ONLY
INDX
DATE
DATUM
VPS
SU MO TU WE TH FR SA
SO MO DI MI DO FR SA
REPEAT
ITR
GO-TO
REMAIN
WOCH
AUT
ZIEL
RESERVE
TIMER
1234 5678
R44 100K
R43 100K
R39 100K
R12 33K
C18 10/16
C17 0.047
D2
D3
R6 33K
R1 10K
R4 6.8K
TP1 TEST
R15 10K
R16 10K
R17 4.7K
R30 220K
C15 100P
C16 100P
RA1 33K x 4
R101 270
R102 270
R103 270
R104 270
R105 270
D101 POWER
D102 PLAY
D103 PAUSE
D104 REC
D105 AUTO TRACK
D104 SLH-34VC3F
D102, D105 SLH-34MC3F
D101 SLR-55VC3F
D103 SLH-34DC3F
R40 270
R41 10K
R42 560
X1
C7 12P
C6 20P
C6 CLOCK
R3 27K
C14 10/50
R2 4.7K
R25 10K
R26 10K
IC 2 RESET
R5 33K
R7 1K
E ONLY R31 150
D5
C3 0.01
C4 10/16
C13 0.01
C19 10/16
C11 10/16
C5 E : 1/5 EG: 0.1/5
S1 POWER
S2 STOP /EJECT
S3 FF/ SEARCH+
S4 REW/ SEARCH−
S6 REC/ITR
S7 PLAY/X2
S8 PAUSE
S18 PROGRAM
S19 ITR (START)
S21 CANCEL/ SKIP/RESET
S22 MEMORY
S23 SELECT
S24 TIMER
S25 SET+ /TRACK+
S26 SET− /TRACK−
S28 DISP OFF
S29 SEARCH
S30 CH SET /VPS
S32 COUNTER /REMAIN /DATE
S49 CH +
S50 CH −
D111
D112
D115
D116
D117
D118
D129
D131 EG ONLY
D133
D140
B102
B106
OFF INDX FULL
S405 REPEAT
D111, D112, D115 ~ D118, D129, D131, D133, D140 1SS132
IC 2 IC-PST523H-2
D5 11ES2
VDD
Se Sf Sg Sh Si Sj
VPRE
VLOAD
Sk Sl Sm Sn So Sp
10G 9G 8G 3G 2G 1G 7G 6G 5G 4G
RESET
PROG
AUTO TRACK
NC
XT1
Sd Sc Sb Sa
POWER DOWN
OS CLK
OS DATA
TEST
REMOTE
CA TV CTL
CNT PLS
KS 0 KS 1 KS 2 KS 3
M/C DATA
M/C CLK
S DATA
S CLK
OS CE
OS RESET
POWER
PLAY
PAUSE
REC
X1
X2
Vss
V.OUT
VCC
GND

3.22 TIMER/DISP/SW CIRCUIT BOARD


PB10364 A B C D E
T/D/S PWB ASS'Y
IC1
IC101
TP1
IC2
Q1
CN1
CN2
CN3
CP1
RA1
RA2
X1
S49 CH+
S50
CH-
POWER LED
D101
S1
POWER
R101
R25
R26
R32 R33
R14 R13 R17
S3B FF
S4B REW
S2B STOP /EJECT
S7B PLAY
S6B
REC/ITR
S8B PAUSE /STILL
S24 TIMER
SUMMER TIME ADJ.
/SELECT
S23
S25
SET
S26
PROG./ CLOCK ADJ
S18
REPEAT /C.MEMO. /STORE
S22
CANCEL RESET /SKIP
S21
CH.SET /VPS
S30
S29 SEARCH
DATE/ COUNT/ REMAIN
S32
D102 PLAY
S27
SP/ LP
DISPLAY OFF
S28
D103 PAUSE /STILL
D104 REC
D105 AUTO TRACKING
FULL REPEAT
S405 INDEX REPEAT OFF
S403 AFC
ON OFF
S401 (S402) SIMUL CAST (TUNER SERECT)
ON (NZ) OFF (AUS)
PICTURE SHARP
R402
B102
B105
B159
S19 START
S6A REC/ITR
S8A PAUSE /STILL
S3A FF
S7A PLAY
S4A REW
S2A STOP /EJECT
C3
C4
C5
C6
C7
C11
C13
C14
C15
C16
C17
C18
C19
D1
D2
D3
D4
D5
D6
D111
D112
D115
D116
D117
D118
D123
D124
D125
D126
D127
D128
D129
D131
D132
D133
D134
D139
D140
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R15
R30
R31
R39
R40
R41
R42
R43
R44
R102
R103
R104
R105
B148
B149
B230
B231
B232
B233
B234
B235
B236
B238
B239
B240
B241
1 5 10 15 20 25 30 32
33 35 40 45 50 55 60 64
2 3 4 5 6 7 8 9
A B

6
5
4
3
2
1
A B C 3-41 3-42 E F G H

3.23 PRE/REC SCHEMATIC DIAGRAM

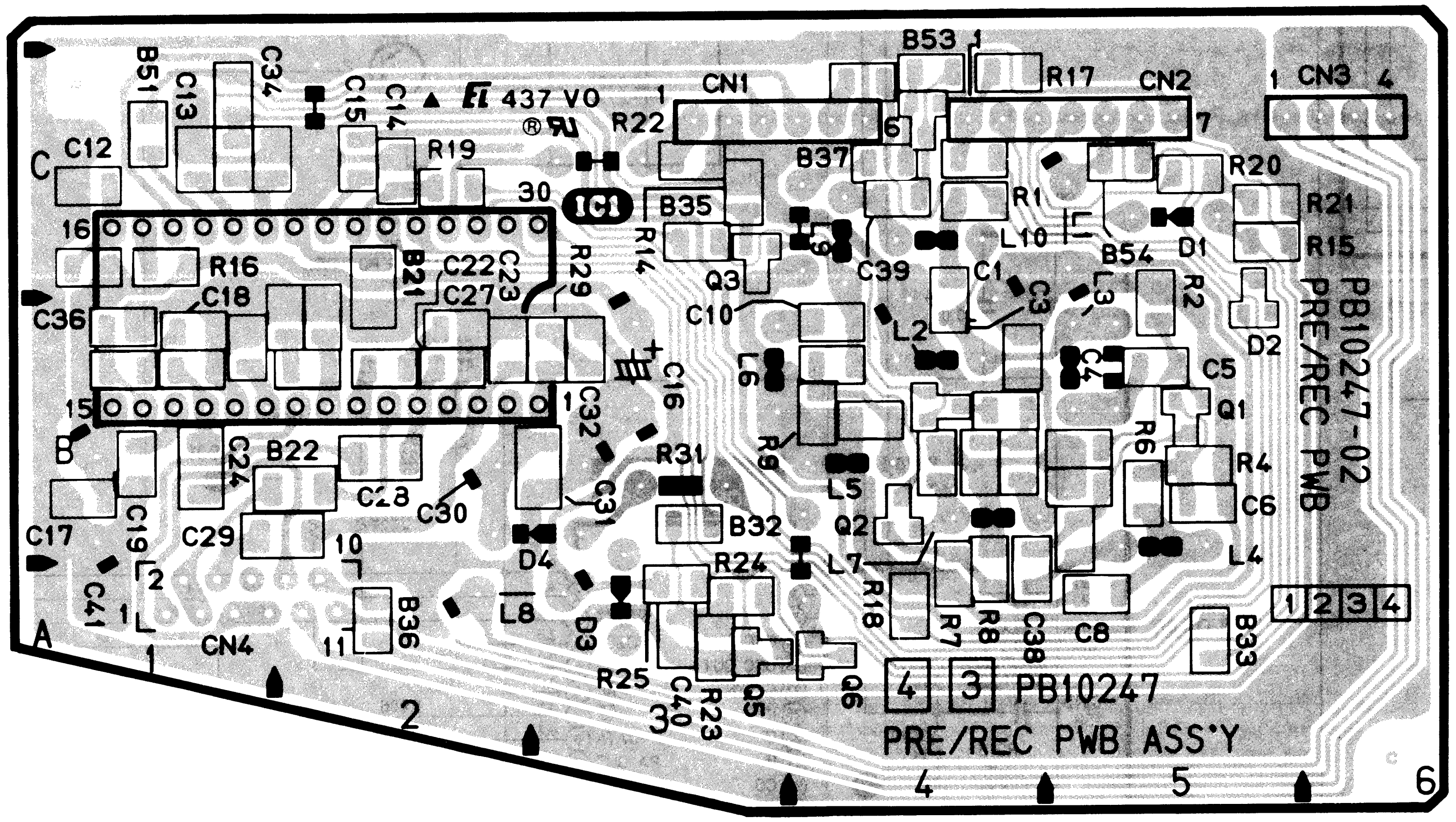

43 PRE/REC
41 UPPER BOARD
ROTARY TRANSFORMER
SPECIAL PB
SP CH-1
SP CH-2
CN4
Q3 2SC4081(QRS)
SWD 5V
L8 47
L1 100
R30 100K
C12 68P
R16 15K
MUTE
REC
REC/PB SW
AGC DET
C13 0.1
C33 0.01
GND
ENV DET
ENV COMP
(AUTO)
OFF
C15 0.01
C14 390P
R19 330K
R20 10K
R21 39K
R22 15K
R23 36K
INTEGRATED INJECTION LOGIC(IIL), CTL LOGIC
D.FF
To EACH SW
REC DET
MUTE SW ON/OFF
D2
D2 MA141K
D4
R31 470K
IC1 AN3386NK-A
C16 47/16
C17 0.033
Vcc
C18 0.01
R26 270
C19 0.1
C24 0.1
C20 100P
C21 0.01
PRE AMP
C26 0.01
C27 0.01
R28 270
C28 0.1
C22 100P
C29 0.1
C23 100P
C31 0.22
C30 6.8/10
R29 270
C32 0.01
REC 3.0 Vp-p
REC 1.3 Vp-p
PB 0.6 Vp-p
PB 0.3 Vp-p
PB 0.38 Vp-p
REC 0.26 Vp-p
REC/PB 3.0 Vp-p
REC/PB 5.0 Vp-p
REC/PB 4.0 Vp-p
From/To 03 VIDEO(MAIN), CN204 (Page 3-12)
CN1
SYNC
GND
PB FM
REC FM COLOR
PB COLOR
GND
From/To 03 VIDEO(MAIN), CN205 (Page 3-12)
CN2
AUTO/MAN/SLOW
COLOR ROT
SP
DRUM FF
SWD 5V
REC START
C9 91P
L5 47
R9 680
L6 120
R10 820
C10 470P
R14 1.2K
R17 5.6K
R18 5.6K
C2 0.01
C1 47/6.3
R1 1K
C3 680P
C4 15P
L3 22
L2 56
C5 0.01
R2 2.2K
R3 2.2K
R4 390
R5 390
R6 820
C7 27P
C38 2P
C8 0.01
L4 56
R7 2.2K
R8 2.2K
R11 1.2K
L7 22
C11 39P
R12 470
Q1 2SA1576(QRS)
Q2 2SC4081(QRS)
6
5
4
3
2
1
A
B
C
E
F
G
H

6

3.24 PRE/REC CIRCUIT BOARD

5

4

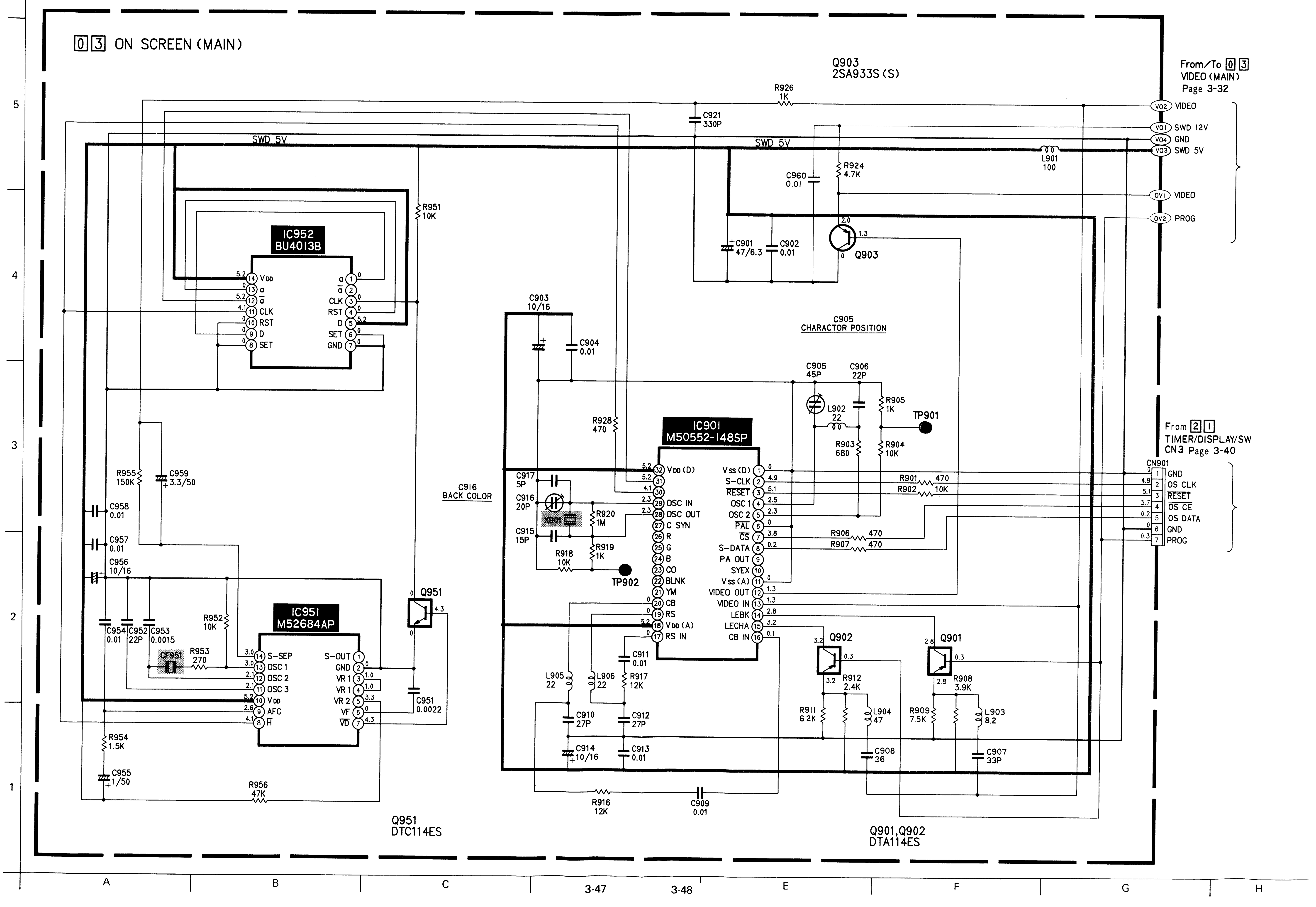

B51
C13
C34
C15
C14
437 V0
1
CN1
B53
R17
CN2
1 CN3 4
C12
C
R19
R22
30
IC1
B35
B37
6
7
R20
R21
R15
R1
L10
B54
D1
16
R16
B21
C22
C23
R29
R14
Q3
C39
C1
C3
L3
R2
PB10247-02
PRE/REC PWB
C36
C18
C27
C10
L2
D2
L6
C16
C4
C5
Q1
15
1
C32
R9
R6
B
C24
B22
C28
R31
L5
R4
C6
C30
C31
C17
C19
C29
10
D4
B32
Q2
L4
R24
L7
2
1
C41
11
B36
L8
D3
R18
R7
R8
C38
C8
B33
1 2 3 4
A
CN4
1
R25
C40
R23
Q5
Q6
4 3 PB10247
PRE/REC PWB ASS'Y
2
3
4
5
6

3

2

1

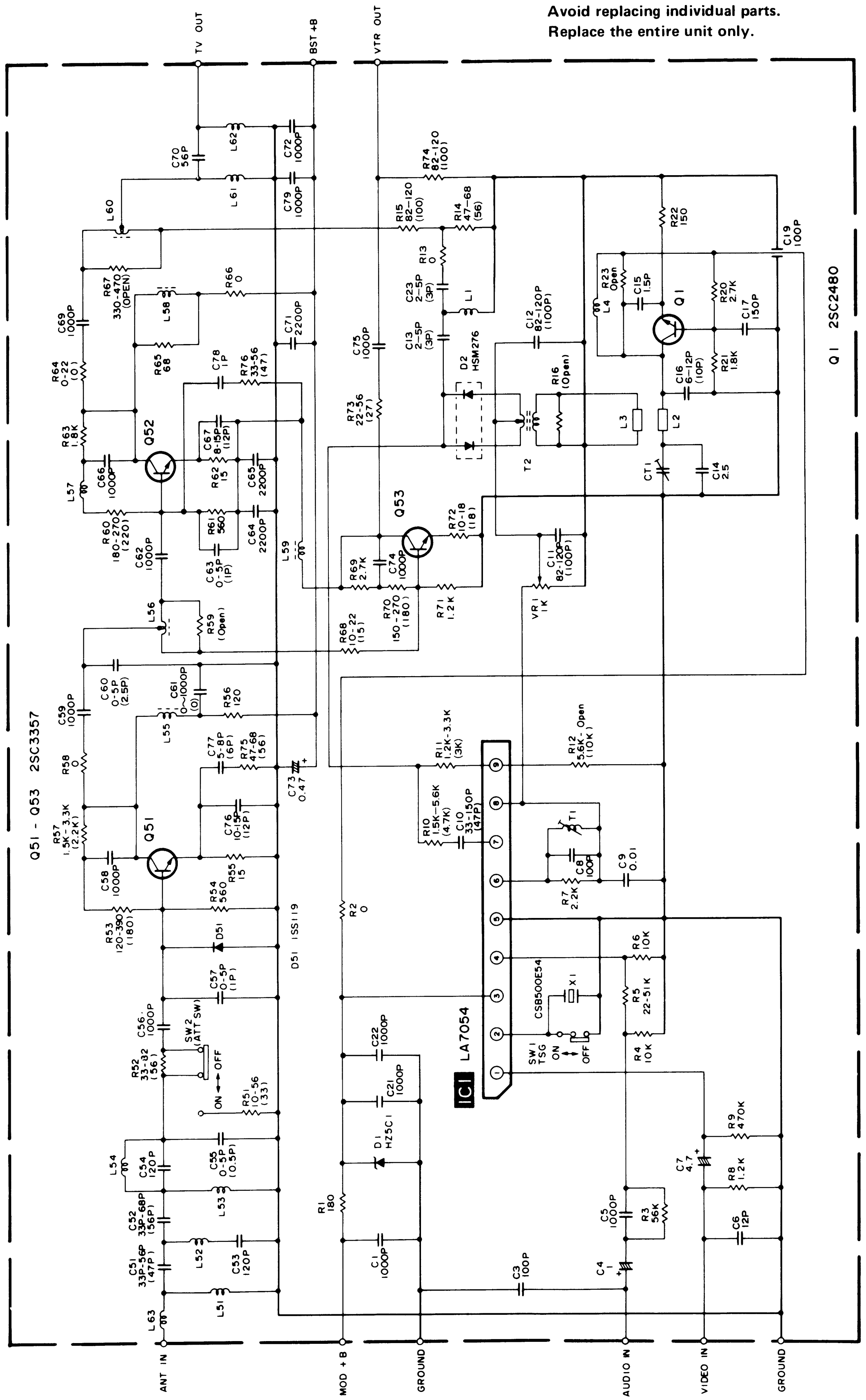
3.25 ON SCREEN SCHEMATIC DIAGRAM


03 ON SCREEN (MAIN)
From/To 03 VIDEO (MAIN) Page 3-32
VO2 VIDEO
VO1 SWD 12V
VO4 GND
VO3 SWD 5V
OV1 VIDEO
OV2 PROG
From 21 TIMER/DISPLAY/SW CN3 Page 3-40
CN901
1 GND
2 OS CLK
3 RESET
4 OS CE
5 OS DATA
6 GND
7 PROG
SWD 5V
SWD 5V
Q903 2SA933S (S)
Q903
R926 1K
C921 330P
C960 0.01
R924 4.7K
L901 100
C901 47/6.3
C902 0.01
IC952 BU4013B
VDD
a
ā
CLK
RST
D
SET
GND
R951 10K
IC951 M52684AP
S-SEP
OSC 1
OSC 2
OSC 3
VDD
AFC
H̄
S-OUT
GND
VR 1
VR 1
VR 2
VF
V̄D̄
C958 0.01
C957 0.01
C956 10/16
C954 0.01
C952 22P
C953 0.0015
CF951
R953 270
R952 10K
R955 150K
C959 3.3/50
R954 1.5K
C955 1/50
R956 47K
Q951
C951 0.0022
C916 BACK COLOR
Q951 DTC114ES
C903 10/16
C904 0.01
IC901 M50552-148SP
VDD (D)
OSC IN
OSC OUT
C SYN
R
G
B
CO
BLNK
YM
CB
RS
VDD (A)
RS IN
Vss (D)
S-CLK
RESET
OSC 1
OSC 2
PAL
CS
S-DATA
PA OUT
SYEX
Vss (A)
VIDEO OUT
VIDEO IN
LEBK
LECHA
CB IN
C917 5P
C916 20P
C915 15P
X901
R920 1M
R919 1K
R918 10K
TP902
R928 470
C905 CHARACTOR POSITION
C905 45P
C906 22P
L902 22
R905 1K
TP901
R903 680
R904 10K
R901 470
R902 10K
R906 470
R907 470
Q902
Q901
R912 2.4K
R911 6.2K
L904 47
C908 36
R908 3.9K
R909 7.5K
L903 8.2
C907 33P
L905 22
L906 22
C911 0.01
R917 12K
C910 27P
C912 27P
C914 10/16
C913 0.01
R916 12K
C909 0.01
Q901,Q902 DTA114ES
A
B
C
D
E
F
G
H
1
2
3
4
5
6

3.26 RF CONVERTER SCHEMATIC DIAGRAM

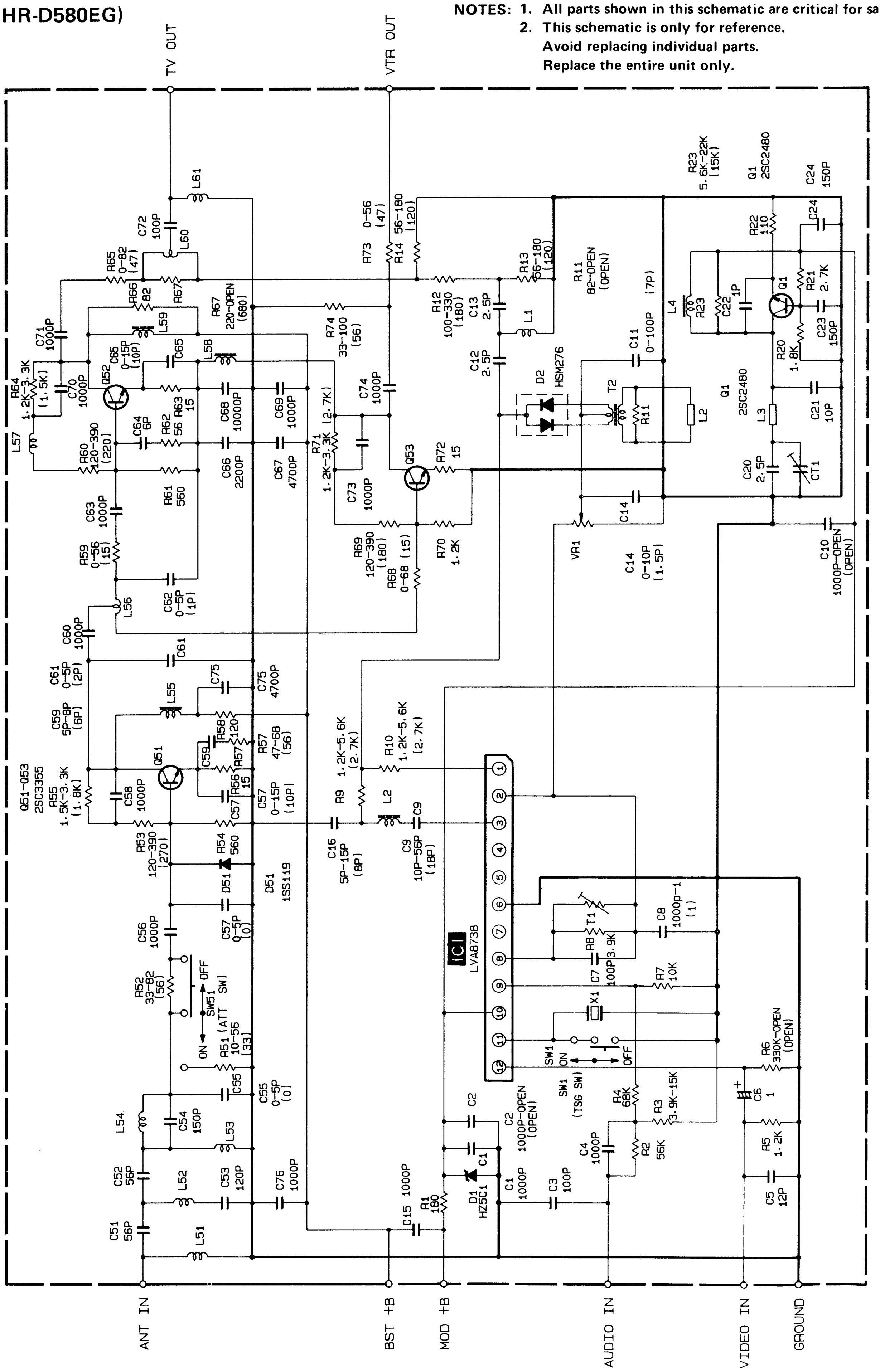
(HR-D580E)

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


TV OUT
BST +B
VTR OUT
Q1 2SC2480
Q51 - Q53 2SC3357
Q51
Q52
Q53
D2 HSM276
D1 HZ5C1
D51 1SS119
IC1 LA7054
CSB500E54
SW1 TSG ON OFF
SW2 (ATT SW) ON OFF
VR1 1K
T1
T2
CT1
X1
ANT IN
MOD +B
GROUND
AUDIO IN
VIDEO IN
GROUND

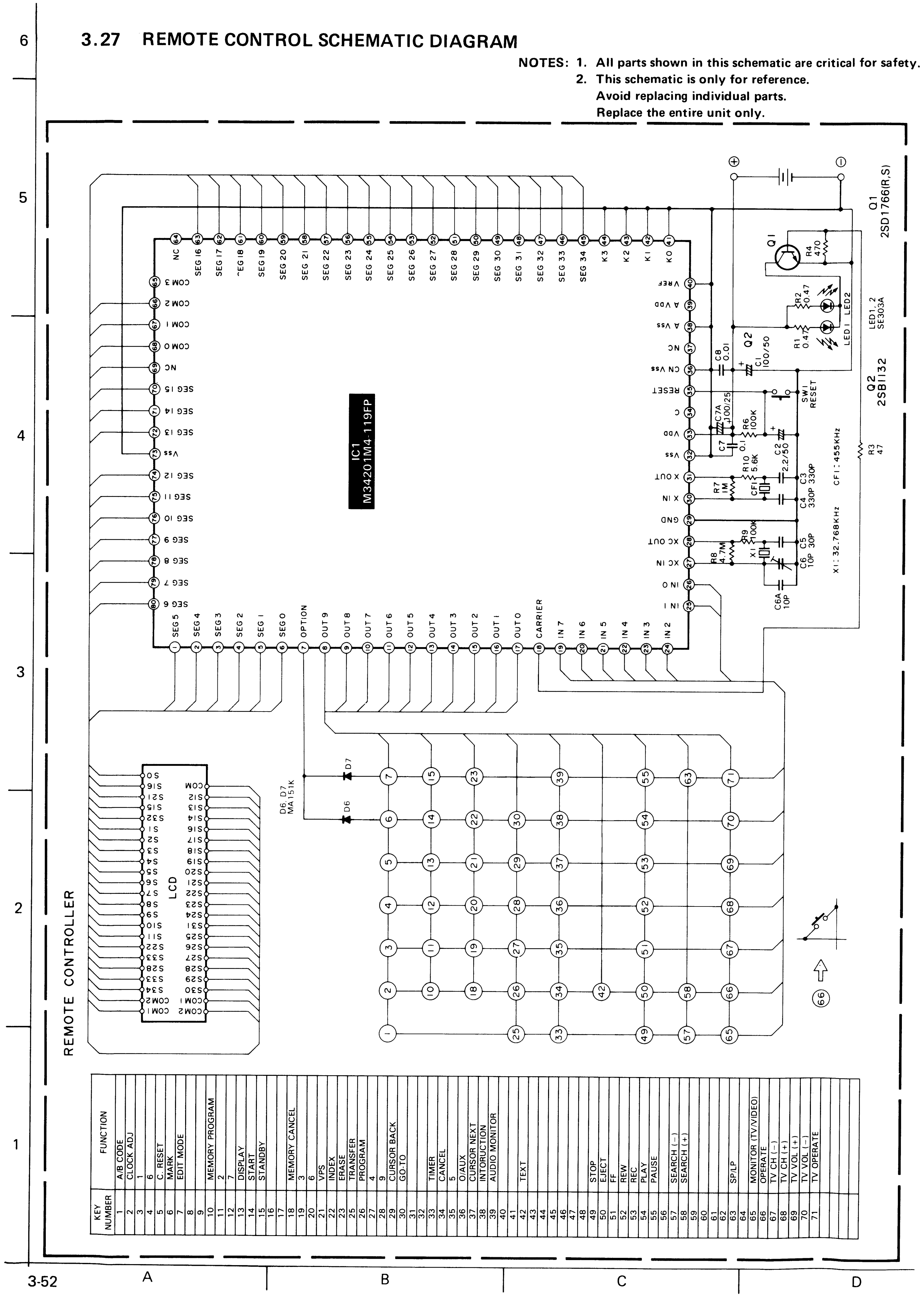
(HR-D580EG)

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


TV OUT
VTR OUT
Q1 2SC2480
Q51-Q53 2SC3355
Q51
Q52
Q53
D2 HSM276
D1 HZ5C1
D51 1SS119
IC1 LVA8738
SW51 (ATT SW) ON OFF
SW1 (TSG SW) ON OFF
VR1
T1
T2
CT1
X1
ANT IN
BST +B
MOD +B
AUDIO IN
VIDEO IN
GROUND

3.27 REMOTE CONTROL SCHEMATIC DIAGRAM

NOTES: 1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


REMOTE CONTROLLER
IC1 M34201M4-119FP
Q1 2SD1766(R,S)
Q2 2SB1132
LED1, 2 SE303A
LED1
LED2
R1 0.47
R2 0.47
R3 47
R4 470
R6 100K
R7 1M
R8 4.7M
R9 100K
R10 5.6K
C1 100/50
C2 2.2/50
C3 330P
C4 330P
C5 30P
C6 10P
C6A 10P
C7 0.1
C7A 100/25
C8 0.01
SW1 RESET
CF1
X1
CF1 : 455KHz
X1 : 32.768KHz
D6
D7
D6, D7 MA151K
LCD
NC
SEG 0 – SEG 34
COM 0
COM 1
COM 2
COM 3
Vss
VDD
A Vss
A VDD
VREF
CN Vss
RESET
C
X OUT
X IN
GND
XC OUT
XC IN
IN 0 – IN 7
OUT 0 – OUT 9
OPTION
CARRIER
K0
K1
K2
K3
1
2
3
4
5
6
A
B
C
D

KEY NUMBER	FUNCTION
1	A/B CODE
2	CLOCK ADJ
3	1
4	6
5	C. RESET
6	MARK
7	EDIT MODE
8	
9	
10	MEMORY PROGRAM
11	2
12	7
13	DISPLAY
14	START
15	STANDBY
16	
17	
18	MEMORY CANCEL
19	3
20	6
21	VPS
22	INDEX
23	ERASE
25	TRANSFER
26	PROGRAM
27	4
28	9
29	CURSOR BACK
30	GO-TO
31	
32	
33	TIMER
34	CANCEL
35	5
36	O/AUX
37	CURSOR NEXT
38	INTORUCTION
39	AUDIO MONITOR
40	
41	
42	TEXT
43	
44	
45	
46	
47	
48	
49	STOP
50	EJECT
51	FF
52	REW
53	REC
54	PLAY
55	PAUSE
56	
57	SEARCH (–)
58	SEARCH (+)
59	
60	
61	
62	
63	SP/LP
64	
65	MONITOR (TV/VIDEO)
66	OPERATE
67	TV CH (–)
68	TV CH (+)
69	TV VOL (+)
70	TV VOL (–)
71	TV OPERATE

SECTION 4
EXPLODED VIEWS AND PARTS LIST

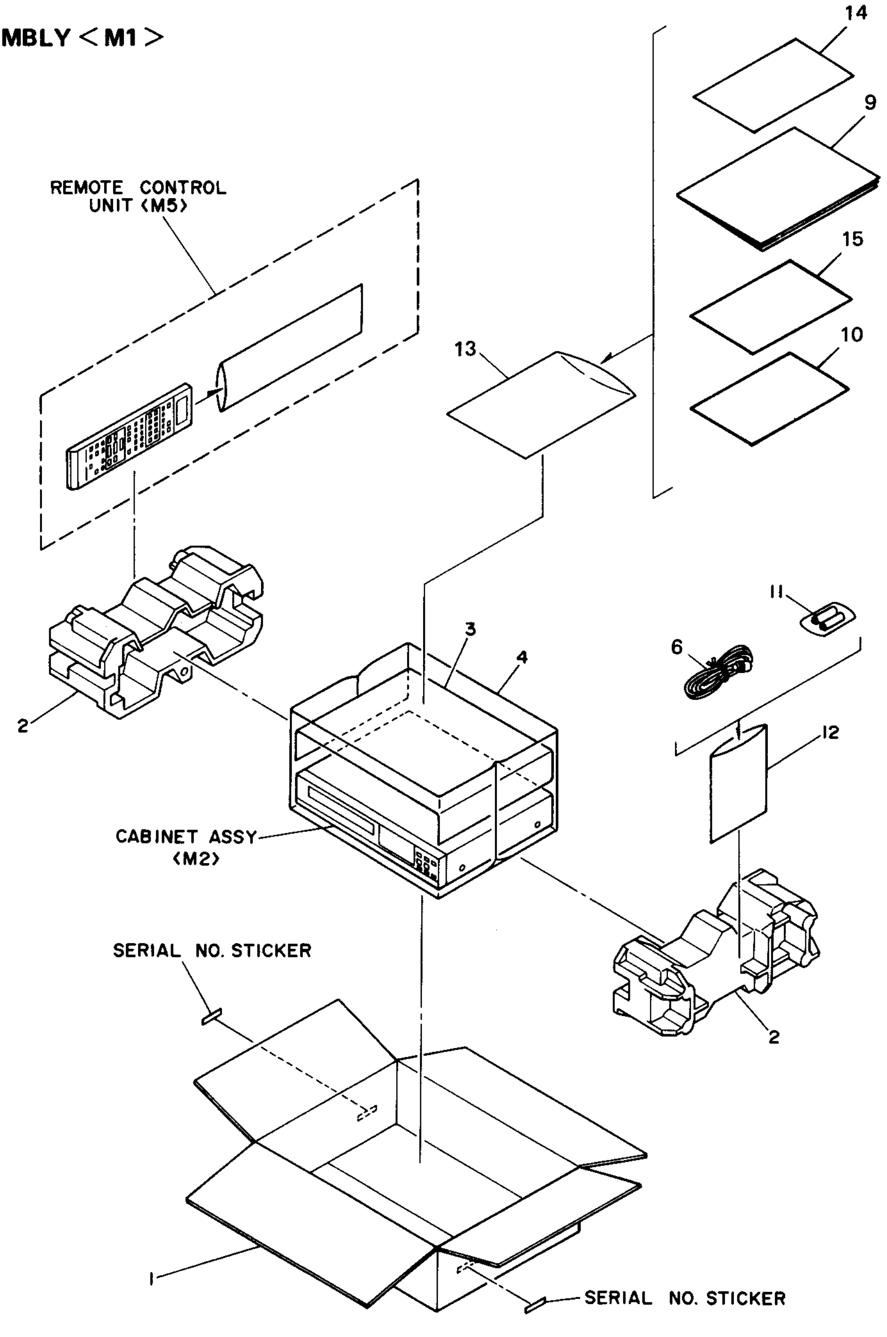
SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

NOTE :

[M] indicates mechanical symbol number.

4.1 PACKING ASSEMBLY < M1 >

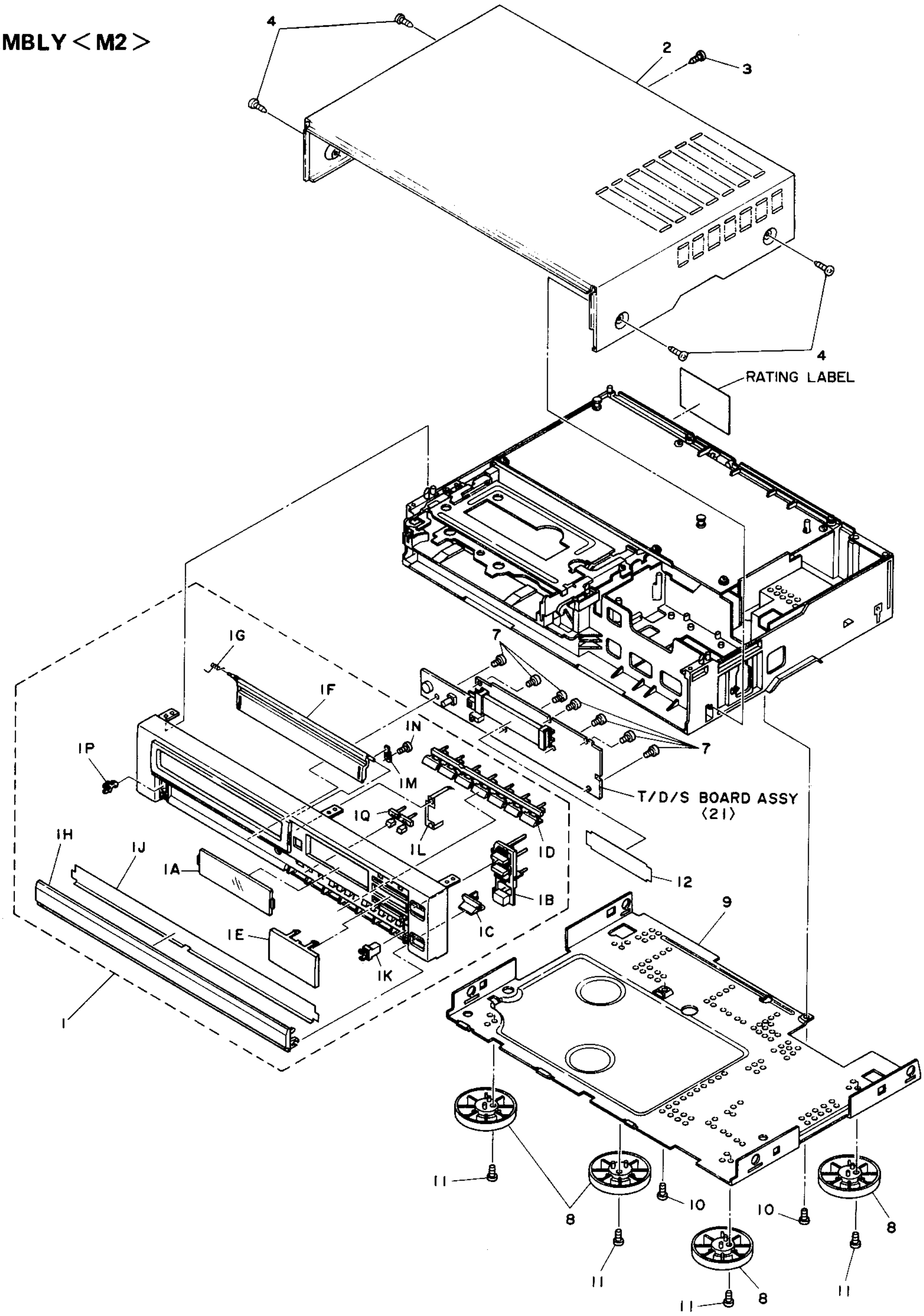

14
9
15
10
13
REMOTE CONTROL UNIT ⟨M5⟩
11
6
3
4
2
12
CABINET ASSY ⟨M2⟩
SERIAL NO. STICKER
2
1
SERIAL NO. STICKER

✱✱ ✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱✱

1. PACKING ASSEMBLY ⟨M1⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PQ32790-167	PACKING CASE, E
		PQ32790-159	PACKING CASE, EG
	2	PQ33275A-1	CUSHION ASSY
	3	PQ41026-20	PROTECT SHEET
	4	PQM30021-59-11	POLY BAG
	6	PU59168-3	RF CABLE
	or	PU59167-3	RF CABLE
⚠	9	PU30425-1121	INSTRUCTIONS, EG
⚠		PU30425-1132	INSTRUCTIONS, E
	10	TCN-3379	TAPE CATALOG
	11	UM-3DJ2P	BATTERY
	12	QPGA020-02005	POLY BAG
	13	QPGA025-03505	POLY BAG
	14	BT-20114	WARRANTY CARD, EG
⚠	15	—	DBP INF SHEET, EG

4.2 CABINET ASSEMBLY < M2 >

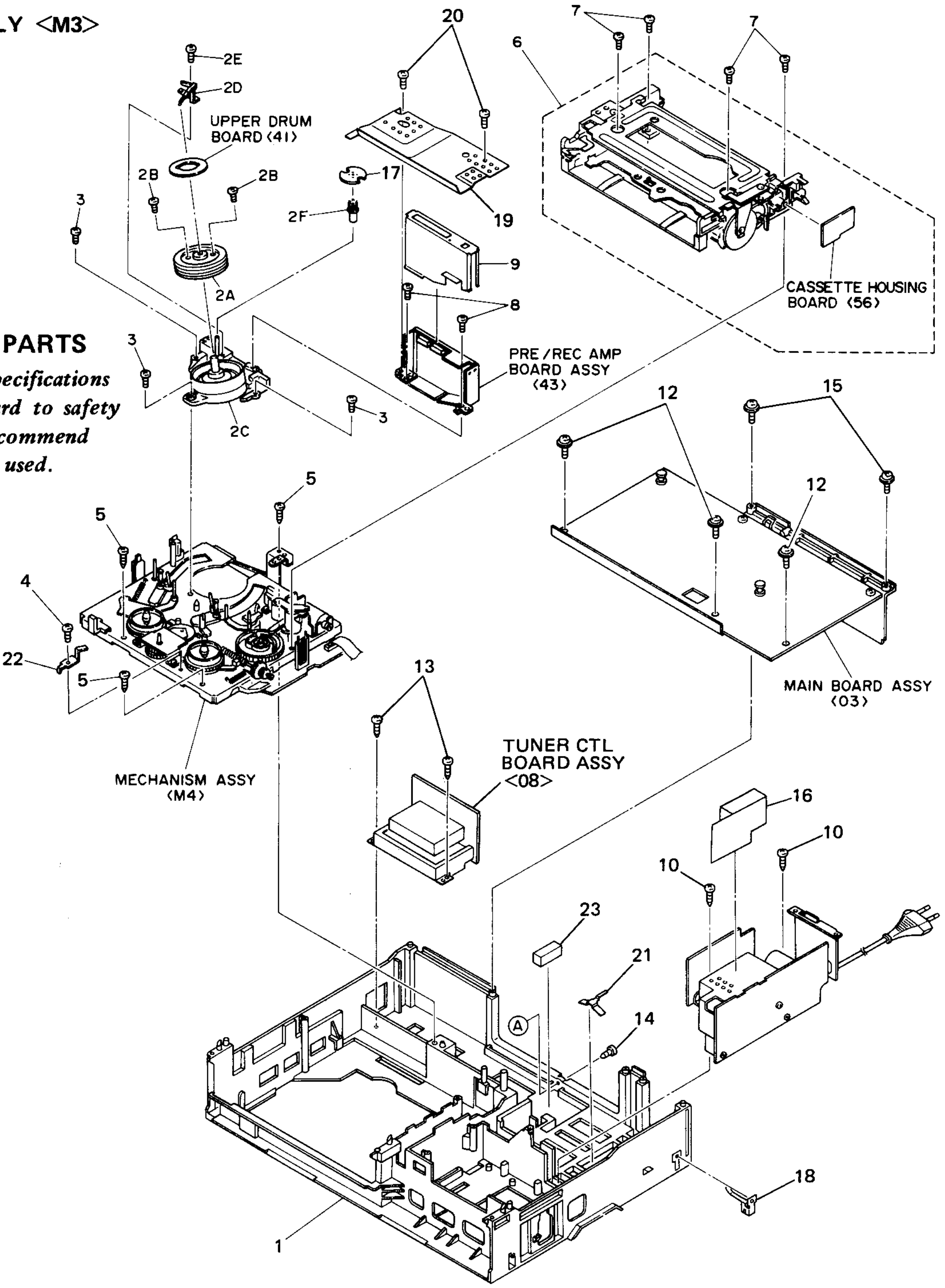

4
2
3
4
RATING LABEL
7
1G
1F
1N
1P
1M
7
T/D/S BOARD ASSY
(21)
1Q
1L
1D
1H
1J
1A
12
1B
9
1E
1C
1K
1
11
10
10
8
8
11
8
11
11
8

****

2. CABINET ASSEMBLY ⟨M2⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PQ10897F-9	FRONT PANEL ASSY, E
		PQ10897C-9	FRONT PANEL ASSY, EG
	1A	PQ33015-3-1	DISPLAY WINDOW, E
		PQ33015-2-1	DISPLAY WINDOW, EG
	1B	PQ20923-3	BUTTON (POWER), EG
		PQ20923-4	BUTTON (POWER), E
	1C	PQ44072-1-2	INDICATOR
	1D	PQ33017-2	BUTTON (OPE 2), EG
		PQ33017-3	BUTTON (OPE 2), E
	1E	PQ20904-2	COVER (2)
	1F	PQ20899-3	CASSETTE HOUSING DOOR
	1G	PQ43628-1-1	TORSION SPRING
	1H	PQ20894-6	DOOR, E
		PQ20894-3	DOOR, EG
	1J	PQ20898-5	PLATE (DOOR), E
		PQ20898-3	PLATE (DOOR), EG
	1K	PU60005	PUSH OPEN UNIT
	1L	PQ44073	EARTH PLATE
	1M	PQ44389	BRACKET
	1N	SDSF2005Z	SCREW
	1P	PU60109	CATCHER
	1Q	PQ33186	BUTTON
⚠	2	PQ10602-11	TOP COVER
	3	SDSF3010M	SCREW, TOP COVER
	4	PQ43827	SPECIAL SCREW, X4 TOP COVER
	7	SDSF2608Z	SCREW, X7 T/D/S BOARD
	8	PQ43456B-1	FOOT ASS'Y, X4
⚠	9	PQ10712-1-3	BOTTOM COVER
	10	SDSF3012Z	SCREW, X2 BOTTOM COVER
	11	SDSF3012Z	SCREW, X4 FOOT ASSY
	12	PQ44752	FILTER (FDP)

4.3 CHASSIS ASSEMBLY <M3>


2E
2D
UPPER DRUM BOARD <41>
2B
2B
3
2F
17
2A
20
19
9
8
PRE/REC AMP BOARD ASSY <43>
6
7
7
CASSETTE HOUSING BOARD <56>
3
3
2C
5
5
4
22
5
MECHANISM ASSY <M4>
12
15
12
MAIN BOARD ASSY <03>
13
TUNER CTL BOARD ASSY <08>
16
10
10
23
21
14
Ⓐ
18
1

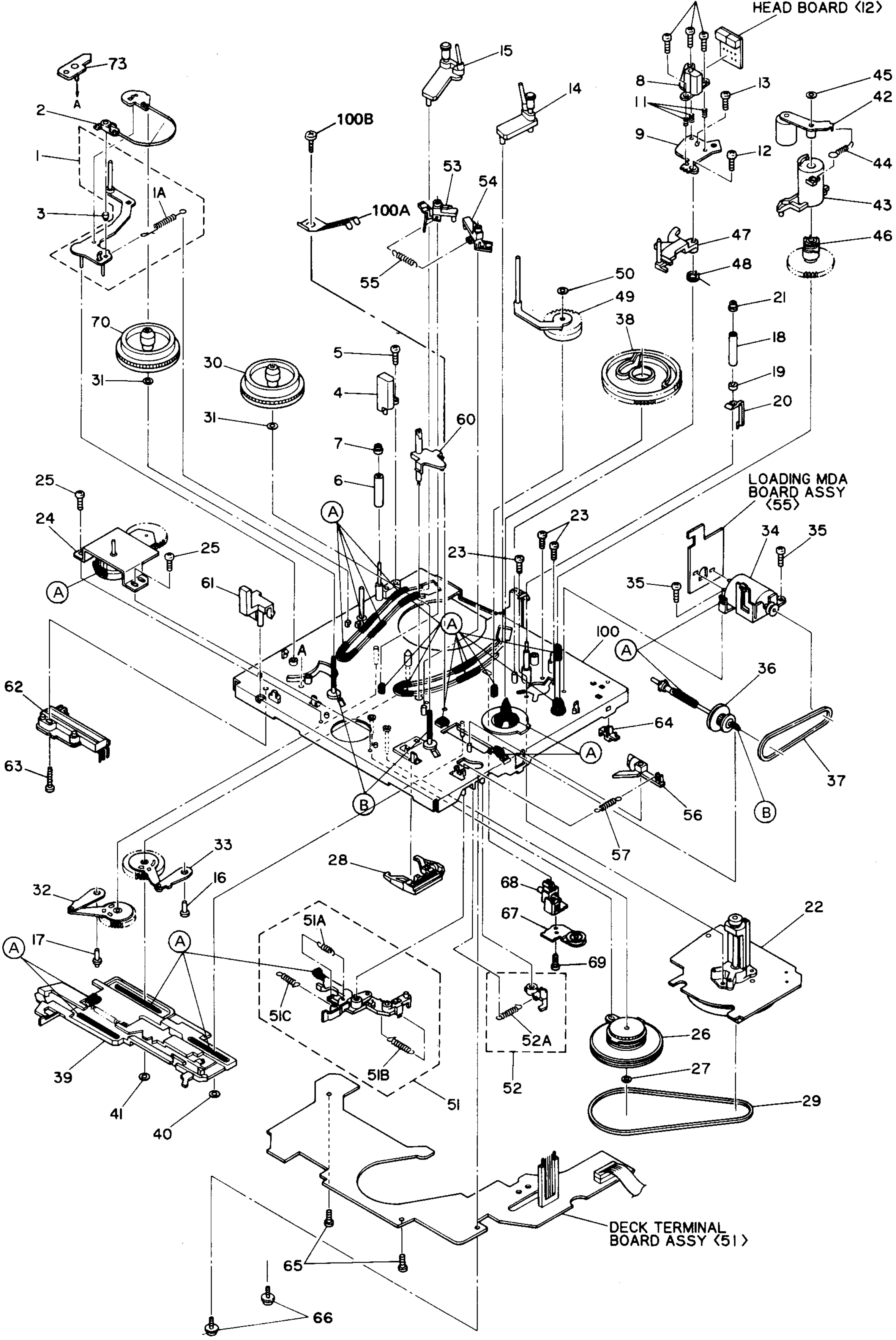
BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.

3. CHASSIS ASSEMBLY ⟨M3⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
⚠	1	PQ10764-1-4	BOTTOM CHASSIS
	2A	PDM2087A-1	UPPER DRUM ASSY
	2B	PDM4165A	DRUM SCREW ASSY, X2
	2C	PDM2138H	LOWER DRUM MOTOR ASSY
	2D	PDM4229A-1	BRUSH ASSY
	2E	SDSG2606Z	SCREW
	2F	PDM4226A	ROLLER ASS'Y
	3	SPST2610Z	SCREW, X3 DRUM ASSY
	4	SPST2606Z	SCREW
	or	SDST2606Z	SCREW
	5	PQ43831	SPECIAL SCREW, X3 MAIN DECK
	6	PUS29183E	CASSETTE HOUSING ASSY
	7	SDST2608Z	SCREW, X4 CASSETTE HOUSING
	8	SDSG2606Z	SCREW, X2 SHELD CASE
	9	PQ32217-1-1	SHIELD CASE (2)
	10	PQ43831	SPECIAL SCREW, X2 POWER TRANS
	12	GPSF2610Z	SCREW, X3 MAIN BOARD
	13	SDSF3008Z	SCREW, X2 TUNER UNIT
	14	SDSF3010M	SCREW, TERMINAL BOARD
	15	GPSF2610Z	SCREW, X2 TERMINAL BOARD
⚠	16	PQ44631	AC COVER
	17	PQ44230	INERTIA PLATE
	18	PQ44679	EARTH PLATE
	19	PQ32387-1-4	DRUM SHIELD
	20	SDST2608Z	SCREW, X2 DRUM SHIELD
	21	PQ43942	EARTH PLATE
	22	PQ43941	R. BRACKET
	23	PQM30029-127	SPACER

4.4 MECHANISM ASSEMBLY <M4>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AUDIO/CONTROL HEAD BOARD ‹12›
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LOADING MDA BOARD ASSY ‹55›
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DECK TERMINAL BOARD ASSY ‹51›
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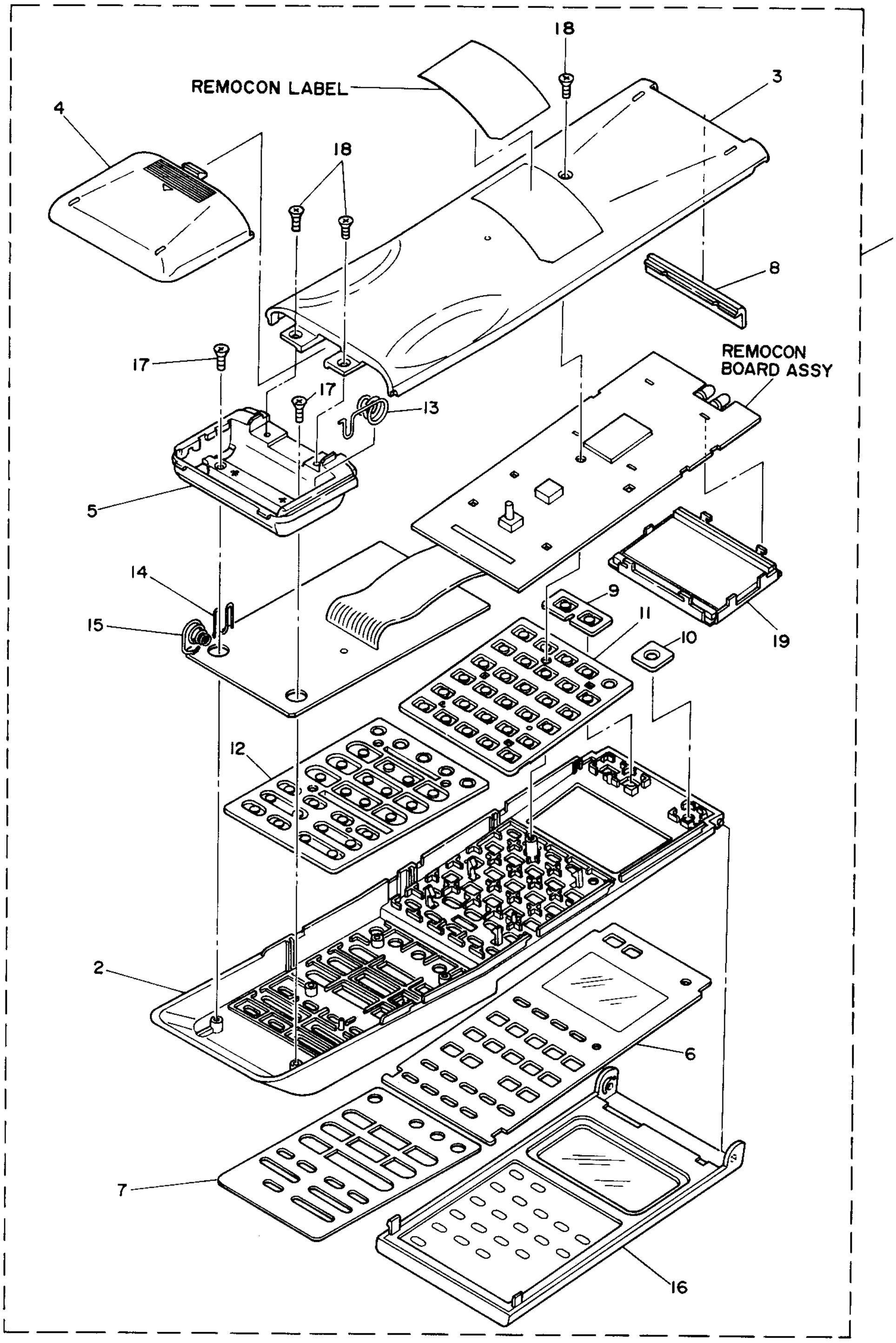
Category	Part number	MARK
Grease	KANTO-G-31KAV	Ⓐ
Oil	COSMO-HV56	Ⓑ

NOTE: The section marked in Ⓐ and Ⓑ indicate lubrication and greasing areas.

4. MECHANISM ASSEMBLY ⟨M4⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PQ43497E-8	TENSION ARM ASSY
	1A	PQ43500	TENSION SPRING
	2	PQ43501B	TENSION BAND ASSY
	3	PQ43503-1-4	ADJUST PIN
	4	PU60616	FULL ERASE HEAD
	5	SDSF2614Z	SCREW
	6	PQ43505-1-1	ROLLER
	7	PQ43506	GUIDE POLE CAP
	8	PU60617	AUDIO/CONTROL HEAD
	9	PQ43509	HEAD BASE
	10	PQ43687A	SPECIAL SCREW, X3
	11	PQM30002-192	COMPRESSION SPRING, X3
	12	SPSP2606Z	SCREW
	13	SPSF2608M	SCREW
	14	PU61103-2	POLE BASE ASSY (TU)
	15	PU61151-2	POLE BASE ASSY (SUPPLY)
	16	PQ43524	STOPPER
	17	PQ43525	STOPPER 2
	18	PQ43526-1-3	TAPE GUIDE
	19	PQ43670-1-1	GUIDE FLANGE
	20	PQ43675	TAPE GUARD
	21	PQ43506	GUIDE POLE CAP
⚠	22	PU61003	CAPSTAN MOTOR
	23	SPSG2608Z	SCREW, X3
	24	PU61004-1-3	IDLER GEAR UNIT
	25	SPST2606Z	SCREW, X2
	26	PU61005-1-2	CLUTCH UNIT
	27	PQM30017-8	SLIT WASHER
	28	PQ43532A-1	CHANGE LEVER ASSY
	29	PU61006	TIMING BELT
	30	PU60858	REEL DISK (TAKE-UP)
	31	PQM30018-54	SPACER, X2
	32	PQ43537A	LOADING ARM ASSY (SUPLLY)
	33	PQ43542B	LOADING ARM ASSY (TAKE-UP)
	34	PQ43676B-5	MODE MOTOR ASSY
		or PQ43676C	MODE MOTOR ASSY
	35	SPST2606Z	SCREW, X2
	36	PQ43548A-3	WORM CLUTCH ASSY
	37	PQM30003-23	BELT (LOADING)
	38	PQ20822-2-4	CONTROL CAM
	39	PQ44326A-1	PLATE ASSY
	40	PQM30017-12	SLIT WASHER
	41	PQM30017-8	SLIT WASHER
	42	PQ43921B	PINCH ROLLER ARM ASSY
		or PQ43921D	PINCH ROLLER ARM ASSY
	43	PQ32415	PINCH ROLLER PRESS LEVER
	44	PQM30001-233	TENSION SPRING
	45	PQM30017-12	SLIT WASHER
	46	PQ32416-2	PINCH ROLLER CAM
	47	PQ43567A-7	GUIDE ARM ASSY
	48	PQ43569-1-3	TORSION SPRING
	49	PQ43570A	HALF LOADING GEAR ASSY
	50	PQM30017-12	SLIT WASHER
	51	PQ43575A-5	C. LEVER ASSY
	51A	PQM30001-273	T. SPRING
	51B	PQM30001-237	TENSION SPRING
	51C	PQM30001-274	T. SPRING
	52	PQ43578A-2	HOOK ASSY
	52A	PQM30001-238	TENSION SPRING
	53	PQ43581A-6	MAIN BRAKE ASSY (SUPPLY)
	54	PQ43582A-1	MAIN BRAKE ASSY (TAKE-UP)
	55	PQM30001-251	TENSION SPRING
	56	PQ43583A	SUB BRAKE ASSY (TAKE-UP)
	57	PQM30001-298	TENSION SPRING
	60	PU60621-1-1	LED HOLDER (INC D1)
	61	PU60624-1-4	REC SAFETY SWITCH (S2)
	62	PU60973	SLIDE SWITCH (S3)
	63	SDSF2614Z	SCREW
	64	PQ32516	PWB HOLDER
	65	SDST2616Z	SCREW, X2
	66	GPSF2608Z	SCREW, X2
	67	PQ43912A-3	PULLEY ARM ASSY
	68	PQ32882	PULLEY BASE
	69	SDSF2608Z	SCREW
	70	PU60859	REEL DISK (SUPPLY)
	73	PQ44246	TENSION BRACKET 3
	100	PQ20650E-18	MAIN DECK ASSY
		or PQ20753D	MAIN DECK ASSY
	100A	PQ43849	EARTH PLATE
	100B	SPST2604Z	SCREW

4.5 REMOTE CONTROL ASSEMBLY < M5 >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REMOCON LABEL
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REMOCON BOARD ASSY
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5. REMOTE CONTROLLER UNIT ⟨M5⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
⚠	1	PQ10779AR-25	REMOTE CONTROLLER, EG
⚠		PQ10779AT-26	REMOTE CONTROLLER, E
	2	PQ20751	UPPER CASE
	3	PQ20752	LOWER CASE
	4	PQ32715	BATTERY CAP
	5	PQ32758	BATTERY CASE
	6	PQ32718-25	TOP PANEL (1), EG
		PQ32718-27	TOP PANEL (1), E
	7	PQ32719-34-7	TOP PANEL (2), EG
		PQ32719-36-8	TOP PANEL (2), E
	8	PQ43800	IR WINDOW
	9	PQ32720	BUTTON (1)
	10	PQ43802	BUTTON (2)
	11	PQ32721-7	BUTTON (3)
	12	PQ32722-26	BUTTON (4), E
		PQ32722-24	BUTTON (4), EG
	13	PQ43803	TERMINAL (A)
	14	PQ43843	TERMINAL (B)
	15	PQ43844	TERMINAL (C)
	16	PQ32901L	DOOR ASSY, EG
		PQ32901N	DOOR ASSY, E
	17	SSSF2006M	SCREW, X2
	18	SSSF2010M	SCREW, X3
	19	PQ43845	HOLDER (LCD)

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

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6. POWER TRANSFORMER BOARD ASSEMBLY ⟨01⟩⟨02⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PB20439A-02	P. SUPPLY BOARD ASSEMBLY
⚠	POC1	QMP3980-200	POWER CORD
⚠	BKT1	PQ20971	TRANS BRACKET
⚠	HD1	QHS3771-108	STRAIN RELIEF
	SCW1	SDST3006Z	SCREW, X4
	SLD1	PQ33261-1-1	SHIELD CASE (1)
	SLD2	PQ33262	SHIELD CASE (2)

— SWITCH REGULATOR BOARD ASSEMBLY ⟨01⟩ —

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA1	PB20439A1-02	SW. REGULATOR BOARD ASSEMBLY	
	IC1	LM358N	IC	
	or	LM358P	IC	
	Q1	2SC4517A	TRANSISTOR	
	Q2	2SC3616(MLK)	TRANSISTOR	
	Q5	2SB941P	TRANSISTOR	
	D1	10E6-F2	DIODE	
	D2	10E6-F2	DIODE	
	D3	10E6-F2	DIODE	
	D4	10E6-F2	DIODE	
	D5	AU01	FR DIODE	
	D6	AU01	FR DIODE	
	D7	MTZ27BT-77	ZENER DIODE	
	D8	AU01Z	FR DIODE	
	or	ERA48-02	FR DIODE	
	D14	AU01Z	FR DIODE	
	or	ERA48-02	FR DIODE	
	D15	11EFS2	FR DIODE	
	D16	FML-12S	FR DIODE	
	or	F6P20F	FR DIODE	
	D17	FMB-24	BARRIER DIODE	
	or	F5KQ40B	BARRIER DIODE	
	D18	AU01Z	FR DIODE	
	or	ERA48-02	FR DIODE	
	D19	MTZ30AT-77	ZENER DIODE	
	D20	RD8.2ES-T1B1	ZENER DIODE	
	or	UZ8.2BSA	ZENER DIODE	
	D21	AK04	DIODE	
	D22	MTZV6.2A	ZENER DIODE	
	D23	AK04	DIODE	
	D29	RD15ES-T1B1	ZENER DIODE	
	R1	QRZ0078-2R2	W.W. RESISTOR	2.2Ω
	R2	QRD161J-334	RESISTOR	330KΩ, 1/6W
	R3	QRD161J-334	RESISTOR	330KΩ, 1/6W
	R4	QRD161J-563	RESISTOR	56KΩ, 1/6W
	R5	QRG029J-683G	OMF RESISTOR	68KΩ, 2W
	R6	QRG029J-241G	OMF RESISTOR	240Ω, 2W
	R7	QRD161J-122	RESISTOR	1.2KΩ, 1/6W
	R8	QRD161J-471	RESISTOR	470Ω, 1/6W
	R9	QRX014J-R33	MF RESISTOR	0.33Ω, 1W
	R10	QRG029J-303A	OMF RESISTOR	30KΩ, 2W
	R17	QRD161J-221	RESISTOR	220Ω, 1/6W
	R18	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R19	QRV144F-1071AY	CMF RESISTOR	1.07KΩ
	R20	QRV144F-1001AY	CMF RESISTOR	1.00KΩ
⚠	R21	QRZ0077-470X	FUSIBLE RESISTOR	47Ω
	R22	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R23	QRD161J-471	RESISTOR	470Ω, 1/6W
	R24	QRV144F-4023AY	RESISTOR	402KΩ
	R25	QRV144F-1002AY	CMF RESISTOR	10.0KΩ
	R26	QRV144F-1182AY	CMF RESISTOR	11.8KΩ
	R28	QRD161J-331	RESISTOR	330Ω, 1/6W
	R29	QRD161J-103	RESISTOR	10KΩ, 1/6W
⚠	C1	QFZ9022-333	MM CAPACITOR	0.033μF
	C2	QFZ9022-333	MM CAPACITOR	0.033μF
⚠	C3	QFZ9022-333	MM CAPACITOR	0.033μF
⚠	C6	QCZ9016-222M	CAPACITOR	0.0022μF
⚠	C7	QCZ9016-222M	CAPACITOR	0.0022μF
⚠	C8	QCZ9016-222M	CAPACITOR	0.0022μF
⚠	C9	QCZ9016-222M	CAPACITOR	0.0022μF
⚠	C10	QCZ9016-222M	CAPACITOR	0.0022μF
⚠	C11	QCZ9016-222M	CAPACITOR	0.0022μF
	C12	QEZ0147-107	E CAPACITOR	100μF
	or	QEZ0111-107	E CAPACITOR	100μF
	C13	QCY53AK-472	CAPACITOR	0.0047μF, 1000V
	or	QCZ0212-472	CAPACITOR	0.0047μF
	C14	QCZ0212-101	CAPACITOR	100PF

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C15	QFV41HJ-124	TF CAPACITOR	0.12μF, 50V
	or	QFV11HJ-124	MMT CAP	0.12μF, 50V
	C16	QFL41HJ-682	M CAPACITOR	0.0068μF, 50V
	C17	QETC1HM-475	E CAPACITOR	4.7μF, 50V
	C18	QETC1JM-336	E CAPACITOR	33μF, 63V
	C19	QEZ0125-477	E CAPACITOR	470μF
	or	QEZ0138-477	E CAPACITOR	470μF
	C20	QETC1EM-337	E CAPACITOR	330μF, 25V
	C21	QEMB1CM-158	E CAPACITOR	1500μF, 16V
	C22	QETB1CM-108	E CAPACITOR	1000μF, 16V
	C23	QFL41HJ-102	M CAPACITOR	0.001μF, 50V
	C24	QEZ0136-228	E CAPACITOR	2200μF
	or	QEZ0106-228	E CAPACITOR	2200μF
	C25	QETC1HM-476	E CAPACITOR	47μF, 50V
	C26	QETC1VM-336	E CAPACITOR	33μF, 35V
	C27	QFL41HJ-103	M CAPACITOR	0.01μF, 50V
	C28	QEZ0156-127Z	E CAPACITOR	120μF
	or	QEZ0135-127Z	E CAPACITOR	120μF
	C29	QETC0JM-107	E CAPACITOR	100μF, 6.3V
	C30	QFL41HJ-103	M CAPACITOR	0.01μF, 50V
	C50	QFL41HJ-122	M CAPACITOR	0.0012μF, 50V
⚠	C52	QCZ9016-101K	CAPACITOR	100PF
⚠	C53	QCZ9016-101K	CAPACITOR	100PF
	L1	PU60943-330K	COIL	33μH
	L2	PU60943-100M	COIL	10μH
	L3	PU60943-330K	COIL	33μH
	L4	PU48530-101K	COIL	100μH
⚠	PHS1	PC111S	PHOTO COUPLER	
⚠	T1	PELN0301	SWITCHING TRANS	
⚠	HD1	PU57505	FUSE CLIP, X2	
	HS1	PQ44610	HEAT SINK, FOR Q1	
	HS2	PQ44724	HEAT SINK, FOR D16, D17	
⚠	LF1	PU61108	LINE FILTER	
⚠	or	PU60347	LINE FILTER	
⚠	LF2	PU59707	LINE FILTER	
⚠	or	PELN0255	LINE FILTER	
	SCW1	SDSG3008Z	SCREW, X2	
	SCW2	SDSG3008Z	SCREW, X2, FOR D16, D17	
	SCW3	SDSG3006Z	SCREW, FOR HEAT SINK	
⚠	SLD1	PQ44698	INSULATOR	
⚠	TAB1	A74316	TAB, X2	
	CN1	PU58844-104	CAP HOUSING, PIN 4-7	
	CN2	PU58844-8	CAP HOUSING, PIN 2-9	
⚠	CP1	ICP-N5	CIRCUIT PROTECTOR	
⚠	CP2	ICP-N20	CIRCUIT PROTECTOR	
⚠	F1	QMF51E2-1R0	FUSE	1.0A, AC250V
⚠	or	QMF51E2-1R0J1	FUSE	1.0A, AC250V

— REGULATOR BOARD ASSEMBLY ⟨02⟩ —

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA2	PB20439A2-02	REGULATOR BOARD ASSEMBLY	
	IC2	UPC24M05HF	IC	
	Q7	2SB1425(EU)	TRANSISTOR	
	Q8	2SC1740S	TRANSISTOR	
	Q9	2SB941P	TRANSISTOR	
	Q10	2SC1740S(Q)	TRANSISTOR	
	Q11	2SC1740S	TRANSISTOR	
	Q12	2SA933S	TRANSISTOR	
	or	2SA1267(YG)-TJK	TRANSISTOR	
	D24	11ES2	DIODE	
	or	ERA15-02	DIODE	
	D25	1SS133	DIODE	
	or	MA165	DIODE	
	D26	UZ5.1BSC	ZENER DIODE	
	or	RD5.1ES-T1B3	ZENER DIODE	
	or	MTZV5.1C	ZENER DIODE	
	R31	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R32	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R33	QRD161J-221	RESISTOR	220Ω, 1/6W
	R34	QRD161J-822	RESISTOR	8.2KΩ, 1/6W
	R35	QRD161J-471	RESISTOR	470Ω, 1/6W
	R36	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R37	QVZ3518-471AZ	V RESISTOR, SWD 5V	470Ω
	or	QVZ3523-471AZ	V RESISTOR, SWD 5V	470Ω
	R38	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R39	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R40	QRD161J-103	RESISTOR	10KΩ, 1/6W
⚠	R41	QRZ0077-220X	FUSIBLE RESISTOR	22Ω
	R51	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R52	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	C34	QETC1JM-226	E CAPACITOR	22μF, 63V
	C35	QETC1CM-107	E CAPACITOR	100μF, 16V
	C36	QETC0JM-107	E CAPACITOR	100μF, 6.3V
	C37	QETC1CM-107	E CAPACITOR	100μF, 16V
	C38	QETC1AM-107	E CAPACITOR	100μF, 10V
	C39	QETB1AM-228	E CAPACITOR	2200μF, 10V
	C40	QFL41HJ-103	MY CAPACITOR	0.01μF, 50V
	C41	QETC0JM-107	E CAPACITOR	100μF, 6.3V
	C43	QFL41HJ-103	MY CAPACITOR	0.01μF, 50V
	C44	QETC0JM-107	E CAPACITOR	100μF, 6.3V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C51	QETC1CM-476	E CAPACITOR	47μF, 16V
	TP1	PU54983	TEST PIN, X3, (TP1-3)	
	CN3	PU58844-108	CAP HOUSING, PIN 2-9	
	CN4	PU60910-112	CAP HOUSING	
	CP3	ICP-N20	CIRCUIT PROTECTOR	
⚠	CP4	ICP-N38	CIRCUIT PROTECTOR	
⚠	CP5	ICP-N38	CIRCUIT PROTECTOR	

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7. MAIN BOARD ASSEMBLY ⟨03⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB10350J-01	MAIN BOARD ASSY, E	
		PB10350F-01	MAIN BOARD ASSY, EG	
⚠	RF1	PERF0028	RF CONVERTER/MIX BOOSTER, EG	
⚠		PU59980M-6	RF CONVERTER/MIX BOOSTER, E	
	BKT1	PQ32369	BRACKET	
	CL1	PEME0767	WIRE HOLDER	
	CL2	PU59311-3	WIRE CLAMP	
	CL3	PU55379	MINI CLAMP	
	CL4	PU59311-4	WIRE CLAMP	
	ETH1	PQ43012-1-1	EARTH PLATE, FOR RF CONV.	
	RV1	PU56800	NYLON RIVET	
	SCW1	SDST2605Z	SCREW, RF CONV.	
	SCW2	SDSF2608Z	SCREW, X2, FOR TERMINAL BOARD	
	SPC1	PU60010	SPACER	
⚠	TB1	PQ20776-1-5	TERMINAL BOARD, EG	
⚠		PQ20776-3-5	TERMINAL BOARD, E	
	WR1	PW30401-BB20T	COAXIAL CORD, CONV.-TUN.	
		or PW30402-BB20M	COAXIAL CORD, CONV.-TUN.	
		or PW30401-BB20S	COAXIAL CORD, CONV.-TUN.	
	J701	PU60192N	CONNECTOR BOARD	
	J702	PU60612	MINI JACK	
		or PU61012	MINI JACK	
	TP31	PU57545	TEST PIN, X14	

— AUDIO SECTION —

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
⚠	IC1	BA7765AS	IC	
⚠		or XRA7765AS	IC	
	Q1	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(G)-TJK	TRANSISTOR	
	Q2	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(G)-TJK	TRANSISTOR	
	Q3	DTA114ES	TRANSISTOR	
	Q4	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(G)-TJK	TRANSISTOR	
	Q5	DTA124ES	TRANSISTOR	
	Q6	DTA144ES	TRANSISTOR	
	D2	1SS133	DIODE	
		or MA165	DIODE	
	D3	RD5.1ES-T1B2	ZENER DIODE	
		or UZ5.1BSB	ZENER DIODE	
		or HZS5.1EB2	ZENER DIODE	
	R1	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R2	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R4	QRD161J-242	RESISTOR	2.4KΩ, 1/6W
	R5	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R6	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R7	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R8	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R9	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R10	QRD161J-100	RESISTOR	10Ω, 1/6W
	R11	QVZ3518-683AZ	V RESISTOR, BIAS ADJ	68KΩ
		or QVZ3523-683AZ	V RESISTOR, BIAS ADJ	68KΩ
	R12	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R13	QRD161J-6R8	RESISTOR	6.8Ω, 1/6W
	R15	QRD161J-183	RESISTOR	18KΩ, 1/6W
	R16	QRD161J-181	RESISTOR	180Ω, 1/6W
	R17	QRD161J-274	RESISTOR	270KΩ, 1/6W
	R18	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R21	QRD161J-183	RESISTOR	18KΩ, 1/6W
	R22	QRD161J-682	RESISTOR	6.8KΩ, 1/6W
	R23	QRD161J-622	RESISTOR	6.2KΩ, 1/6W
	R24	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R25	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R26	QRD161J-475	RESISTOR	4.7MΩ, 1/6W
	R27	QRD161J-475	RESISTOR	4.7MΩ, 1/6W
	R28	QRD161J-123	RESISTOR	12KΩ, 1/6W
	R29	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R30	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R32	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R34	QRD161J-151	RESISTOR	150Ω, 1/6W
	R36	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R37	QRD161J-273	RESISTOR	27KΩ, 1/6W
	R40	QRD161J-272	RESISTOR	2.7KΩ, 1/6W
	R41	QRD161J-475	RESISTOR	4.7MΩ, 1/6W
	R45	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R46	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
⚠	R47	QRZ0077-4R7X	FUSIBLE RESISTOR	4.7Ω
	R49	QRD161J-473	RESISTOR	47KΩ, 1/6W
	C1	QCBB1HJ-561	CAPACITOR, E	560PF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C1	QCXC1CM-122	CAPACITOR, EG	0.0012μF, 16V
	C2	QCBB1HJ-561	CAPACITOR, E	560PF, 50V
		QCXC1CM-122	CAPACITOR, EG	0.0012μF, 16V
	C3	QCC11EJ-272	CAPACITOR	0.0027μF, 25V
	C4	QCC11EJ-392	CAPACITOR	0.0039μF, 25V
	C5	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C6	QFL31HJ-152	M CAPACITOR	0.0015μF, 50V
	C8	PU60550-105	E CAPACITOR	1μF
	C9	QETC1CM-106	E CAPACITOR	10μF, 16V
	C10	QFV71HJ-103	TF CAPACITOR	0.01μF, 50V
	C11	QEK61HM-105	E CAPACITOR	1μF, 50V
	C12	QETC1CM-106	E CAPACITOR	10μF, 16V
	C13	QEP61CM-106	NP E CAPACITOR	10μF, 16V
	or	QEN61CM-106	NP E CAPACITOR	10μF, 16V
	C14	QETC1CM-336	E CAPACITOR	33μF, 16V
	C15	QETC1HM-104	E CAPACITOR	0.1μF, 50V
	C16	QETC1HM-105	E CAPACITOR	1μF, 50V
	C17	QFV71HJ-103	TF CAPACITOR	0.01μF, 50V
	C19	QETC1HM-335	E CAPACITOR	3.3μF, 50V
	C20	QCC11EJ-822	CAPACITOR	0.0082μF, 25V
	C21	QCC11EJ-152	CAPACITOR	0.0015μF, 25V
	C24	QCC11EJ-222	CAPACITOR	0.0022μF, 25V
	C25	PU57601-475MC	E CAPACITOR	4.7μF
	C26	QCBB1HJ-331	CAPACITOR	330PF, 50V
	C27	QFV71HJ-473	TF CAPACITOR	0.047μF, 50V
	C28	QCXC1CM-122	CAPACITOR, EG	0.0012μF, 16V
	L1	PU58308-103J	COIL	10mH
	L2	PU59152-3R9J	COIL, EG	3.9μH
	L3	PU59152-3R9J	COIL, EG	3.9μH
	L4	PU59152-1R2J	COIL, EG	1.2μH
	L5	PU48530-471K	COIL	470μH
⚠	T1	PU60510-2	OSC TRANSFORMER	
	K5	PU60281-4	FERRITE BEADS, EG	
	CN1	PU58844-4	CAP HOUSING	

— VIDEO SECTION —

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	Q201	DTC114WS	TRANSISTOR	
	Q202	DTC144WS	TRANSISTOR	
	Q203	2SA933S(RS)	TRANSISTOR	
	or	2SA1267(YG)-TJK	TRANSISTOR	
	Q204	2SC1740S(RS)	TRANSISTOR	
	or	2SC3199(GB)-TJK	TRANSISTOR	
	Q205	2SC1740S(RS)	TRANSISTOR	
	or	2SC3199(GB)-TJK	TRANSISTOR	
	Q206	2SC1740S(RS)	TRANSISTOR	
	or	2SC3199(GB)-TJK	TRANSISTOR	
	Q207	2SA933S(RS)	TRANSISTOR	
	or	2SA1267(YG)-TJK	TRANSISTOR	
	Q208	2SA933S(RS)	TRANSISTOR	
	or	2SA1267(YG)-TJK	TRANSISTOR	
	Q209	DTA114ES	TRANSISTOR	
	Q210	2SA854S(QR)	TRANSISTOR	
	Q351	2SA933S(RS)	TRANSISTOR	
	or	2SA1267(YG)-TJK	TRANSISTOR	
	D201	1SS133	DIODE	
	or	MA165	DIODE	
	D202	1SS133	DIODE	
	or	MA165	DIODE	
	D204	1SS133	DIODE	
	or	MA165	DIODE	
	D205	1SS133	DIODE	
	or	MA165	DIODE	
	D206	1SS133	DIODE	
	or	MA165	DIODE	
	D207	1SS133	DIODE	
	or	MA165	DIODE	
	D210	1SS133	DIODE	
	or	MA165	DIODE	
	D211	1SS133	DIODE	
	or	MA165	DIODE	
	D212	1SS133	DIODE	
	or	MA165	DIODE	
	D213	1SS133	DIODE	
	or	MA165	DIODE	
	D343	1SS133	DIODE	
	or	MA165	DIODE	
	R201	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R202	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R205	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R206	QRD161J-562	RESISTOR	5.6KΩ, 1/6W
	R207	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R208	QRD161J-182	RESISTOR	1.8KΩ, 1/6W
	R209	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R210	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R211	QRD161J-182	RESISTOR	1.8KΩ, 1/6W
	R212	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R213	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R214	QRD161J-331	RESISTOR	330Ω, 1/6W
	R215	QRD161J-561	RESISTOR	560Ω, 1/6W
	R216	QRD161J-471	RESISTOR	470Ω, 1/6W
	R217	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R218	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R219	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R220	QVZ3518-681AZ	V RESISTOR, SP REC COLOR	680Ω
	or	QVZ3523-681AZ	V RESISTOR, SP REC COLOR	680Ω
	R221	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R222	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R223	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R224	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R225	QRD161J-561	RESISTOR	560Ω, 1/6W
	R226	QVZ3518-332AZ	V RESISTOR, SP FREQ	3.3KΩ
	or	QVZ3523-332AZ	V RESISTOR, SP FREQ	3.3KΩ
	R227	QRD161J-101	RESISTOR	100Ω, 1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R228	QRD161J-182	RESISTOR	1.8KΩ, 1/6W
	R229	QRD161J-123	RESISTOR	12KΩ, 1/6W
	R230	QRD162J-103	RESISTOR	10KΩ, 1/6W
	R231	QRD123J-391SX	RESISTOR	390Ω, 1/2W
	R232	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R233	QRD161J-682	RESISTOR	6.8KΩ, 1/6W
	R234	QRD161J-101	RESISTOR	100Ω, 1/6W
	R235	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R236	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R237	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R238	QRD161J-750	RESISTOR	75Ω, 1/6W
	R239	QRD161J-750	RESISTOR	75Ω, 1/6W
	R240	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R243	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R244	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R245	QRD161J-681	RESISTOR	680Ω, 1/6W
	R250	QRD161J-471	RESISTOR	470Ω, 1/6W
	R351	QRD161J-272	RESISTOR	2.7KΩ, 1/6W
	C201	QEN61AM-226	NP E CAPACITOR	22μF, 10V
	or	QENC1AM-226	NP E CAPACITOR	22μF, 10V
	C202	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C203	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C204	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C205	QCBB1HJ-121	CAPACITOR	120PF, 50V
	C206	QCBB1HJ-121	CAPACITOR	120PF, 50V
	C207	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C208	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C209	QETC1CM-476	E CAPACITOR	47μF, 16V
	C210	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C211	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C212	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C213	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C214	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C215	QCSB1HJ-390	CAPACITOR	39PF, 50V
	C216	QETC1CM-476	E CAPACITOR	47μF, 16V
	C217	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C218	QETC0JM-477	E CAPACITOR	470μF, 6.3V
	C219	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C220	QCC31CJ-473	CAPACITOR	0.047μF, 16V
	C221	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C222	QETC1HM-105	E CAPACITOR	1μF, 50V
	C224	QCBB1HJ-681	CAPACITOR	680PF, 50V
	C225	QCFB1EZ-223	CAPACITOR	0.022μF, 25V
	C230	QCBB1HJ-102	CAPACITOR, EG	0.001μF, 50V
	C240	QCC31CJ-333	CAPACITOR	0.033μF, 16V
	C241	QETC1CM-336	E CAPACITOR	33μF, 16V
	C302	QCSB1HJ-180	CAPACITOR	18PF, 50V
	C351	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	L201	PU59152-221J	COIL	220μH

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	L202	PU59152-560J	COIL	56μH
	L203	PU48530-101K	COIL	100μH
	L204	PU48530-101K	COIL	100μH
	L205	PU59152-180J	COIL	18μH
	L206	PU48530-101K	COIL	100μH
	L207	PU54710-222	COIL	2.2mH
	L208	PU59152-R22J	COIL	0.22μH
	L305	PU59152-270J	COIL	27μH
	K4	PU60281-5	FERRITE BEADS, EG	
	EQ201	PU54838	EQUALIZER	
	or	PU60714	EQUALIZER	
	CN204	PU58844-6	CAP HOUSING	
	CN205	PU59555-6	CAP HOUSING	

— SERVO SECTION —

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC401	HD49733NT	IC	
	or	HD49733ANT	IC	
	IC501	BA7039	IC	
	Q402	2SA1309(QRS)	TRANSISTOR	
	or	2SA1267(YG)-TJK	TRANSISTOR	
	or	2SA933S(QRS)	TRANSISTOR	
	D401	1SS133	DIODE	
	or	MA165	DIODE	
	D402	1SS133	DIODE	
	or	MA165	DIODE	
	D403	1SS133	DIODE	
	or	MA165	DIODE	
	D404	1SS133	DIODE	
	or	MA165	DIODE	
	D407	1SS133	DIODE	
	or	MA165	DIODE	
	D408	1SS133	DIODE	
	or	MA165	DIODE	
	D409	1SS133	DIODE	
	or	MA165	DIODE	
	D410	1SS133	DIODE	
	or	MA165	DIODE	
	R401	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R402	QRD161J-225	RESISTOR	2.2MΩ, 1/6W
	R403	QRD161J-683	RESISTOR	68KΩ, 1/6W
	R404	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R405	QRD161J-123	RESISTOR	12KΩ, 1/6W
	R406	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R407	QRD161J-392	RESISTOR	3.9KΩ, 1/6W
	R408	QRD161J-105	RESISTOR	1MΩ, 1/6W
	R409	QRD161J-273	RESISTOR	27KΩ, 1/6W
	R411	QRD161J-105	RESISTOR	1MΩ, 1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R412	QRD161J-273	RESISTOR	27KΩ, 1/6W
	R413	QRD161J-273	RESISTOR	27KΩ, 1/6W
	R414	QRD161J-335	RESISTOR	3.3MΩ, 1/6W
	R415	QRD161J-334	RESISTOR	330KΩ, 1/6W
	R416	QRD161J-822	RESISTOR	8.2KΩ, 1/6W
	R418	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R419	QRD161J-473	RESISTOR	47KΩ, 1/6W
	R420	QVZ3518-684	V RESISTOR, SP SW POINT	680KΩ
	R422	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R426	QRD161J-821	RESISTOR	820Ω, 1/6W
	R427	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R428	QRD161J-105	RESISTOR	1MΩ, 1/6W
	R429	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R430	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R434	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R435	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R436	QRD161J-274	RESISTOR	270KΩ, 1/6W
	R437	QRD161J-274	RESISTOR	270KΩ, 1/6W
	R438	QRD161J-224	RESISTOR	220KΩ, 1/6W
	R439	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R440	QRD161J-474	RESISTOR	470KΩ, 1/6W
	R441	QRD161J-823	RESISTOR	82KΩ, 1/6W
	R501	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R502	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R503	QRD161J-272	RESISTOR	2.7KΩ, 1/6W
	R508	QRD161J-124	RESISTOR	120KΩ, 1/6W
	C401	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C402	QEK61AM-226	E CAPACITOR	22μF, 10V
	C403	QFV11HJ-224	TF CAPACITOR	0.22μF, 50V
	C404	QCC31CK-682	CAPACITOR	0.0068μF, 16V
	C405	QEK61EM-475	E CAPACITOR	4.7μF, 25V
	C406	QEK61EM-475	E CAPACITOR	4.7μF, 25V
	C407	QEK61CM-106	E CAPACITOR	10μF, 16V
	C408	QEK61CM-106	E CAPACITOR	10μF, 16V
	C409	QCC31CK-223	CAPACITOR	0.022μF, 16V
	C410	QFV71HJ-184	TF CAPACITOR	0.18μF, 50V
	or	QFV11HJ-184	MMT CAP	0.18μF, 50V
	C411	QCBB1HJ-471	CAPACITOR	470PF, 50V
	C412	QFL31HJ-682	M CAPACITOR	0.0068μF, 50V
	or	QFN31HJ-682	M CAPACITOR	0.0068μF, 50V
	C414	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C415	QEK61AM-226	E CAPACITOR	22μF, 10V
	C416	QEK61AM-226	E CAPACITOR	22μF, 10V
	C417	QCBB1HJ-271	CAPACITOR	270PF, 50V
	C418	QCBB1HJ-561	CAPACITOR	560PF, 50V
	C419	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C420	QEK61HM-105	E CAPACITOR	1μF, 50V
	C421	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C422	QFV71HJ-563	TF CAPACITOR	0.056μF, 50V
	or	QFV11HJ-563	MMT CAP	0.056μF, 50V
	C423	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C427	QCBB1HJ-181	CAPACITOR	180PF, 50V
	C502	QCVB1CM-103	CAPACITOR	0.01μF, 16V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C504	QFV71HJ-104	TF CAPACITOR	0.1μF, 50V
	or	QFV11HJ-104	MM CAPACITOR	0.1μF, 50V
	C505	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C506	QFV71HJ-683	TF CAPACITOR	0.068μF, 50V
	or	QFV11HJ-683	MMT CAP	0.068μF, 50V
	C507	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C508	QEK61AM-226	E CAPACITOR	22μF, 10V
	C509	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	L501	PU59152-270J	COIL	27μH
	CN401	PU59555-4	CAP HOUSING	
	CN402	PU58844-3	CAP HOUSING	
⚠	CP401	ICP-F15	CIRCUIT PROTECTOR	

— MECHACON SECTION —

	IC101	SDA5642	IC, EG	
	IC601	M37418M6-243SP	IC	
	or	M37418E6-111SP	IC	
	IC602	CAT35C104P-013	IC, EG	
		CAT35C104P-014	IC, E	
	Q602	DTC114ES	TRANSISTOR	
	Q603	2SB1425(EU)	TRANSISTOR	
	D601	HZS7.5EB2	ZENER DIODE	
	or	UZ7.5BSB	ZENER DIODE	
	or	MTZ7.5B	ZENER DIODE	
	D602	MA165	DIODE	
	or	1SS133	DIODE	
	D603	MA165	DIODE	
	or	1SS133	DIODE	
	D604	MA165	DIODE	
	or	1SS133	DIODE	
	D605	MA165	DIODE	
	or	1SS133	DIODE	
	D606	11ES2	DIODE	
	or	S5688G	DIODE	
	or	ERA15-02	DIODE	
	or	1SR139-200	DIODE	
	R121	QRD161J-824	RESISTOR, EG	820KΩ, 1/6W
	R122	QRD161J-101	RESISTOR, EG	100Ω, 1/6W
	R123	QRD161J-562	RESISTOR, EG	5.6KΩ, 1/6W
	R124	QRD161J-104	RESISTOR, EG	100KΩ, 1/6W
	R127	QRD161J-105	RESISTOR, EG	1MΩ, 1/6W
	R128	QRD161J-824	RESISTOR, EG	820KΩ, 1/6W
	R129	QRD161J-202	RESISTOR, EG	2KΩ, 1/6W
	R134	QRD161J-271	RESISTOR, EG	270Ω, 1/6W
	R135	QRD161J-271	RESISTOR, EG	270Ω, 1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R601	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R602	QRD161J-332	RESISTOR	3.3KΩ, 1/6W
	R603	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R604	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R605	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R606	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R607	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R608	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R609	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R610	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R611	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R612	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R613	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R614	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R615	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R616	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R617	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R618	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R619	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R620	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R621	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R622	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R623	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R624	QRD162J-105	RESISTOR	1MΩ, 1/6W
	R625	QRD162J-472	RESISTOR	4.7KΩ, 1/6W
	R626	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R627	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R628	QRD161J-822	RESISTOR	8.2KΩ, 1/6W
	R629	QRD161J-471	RESISTOR	470Ω, 1/6W
	R630	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R631	QRD161J-563	RESISTOR	56KΩ, 1/6W
	R632	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R633	QRD161J-303	RESISTOR	30KΩ, 1/6W
	R634	QRD161J-154	RESISTOR	150KΩ, 1/6W
	R635	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R636	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R637	QRD161J-224	RESISTOR	220KΩ, 1/6W
	R638	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R639	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R640	QRD161J-391	RESISTOR	390Ω, 1/6W
	R642	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R643	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	RA601	QRB035J-103XC	RESISTOR ARRAY	
	C108	QFN31HJ-103	M CAPACITOR, EG	0.01μF, 50V
	C109	QFN31HJ-333	M CAPACITOR, EG	0.033μF, 50V
	C110	QCVB1CN-103	CAPACITOR, EG	0.01μF, 16V
	C112	QCBB1HJ-151	CAPACITOR, EG	150PF, 50V
	C601	QEK61HM-105	E CAPACITOR	1μF, 50V
	C602	QCFB1EZ-223	CAPACITOR	0.022μF, 25V
	C603	QEK61EM-335	E CAPACITOR	3.3μF, 25V
	C604	QCC11EK-104	CAPACITOR	0.1μF, 25V
	C605	QEK60JM-107	E CAPACITOR	100μF, 6.3V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C606	QCBB1HJ-121	CAPACITOR	120PF, 50V
	C607	QCBB1HJ-471	CAPACITOR	470PF, 50V
	C608	QETB1CM-337	E CAPACITOR	330μF, 16V
	C609	QCSB1HJ-220	CAPACITOR	22PF, 50V
	L601	PU59152-2R2J	COIL	2.2μH
⚠	CF601	PU60440	RESONATOR	
⚠		or PU60440-2	C RESONATER	
	TH801	PU52108-1R0	POSITIVE THERMISTOR	
	CN601	PEMC0722-017	WIRE TRAP	
		or PEMC0753-017	WIRE TRAP	
	CN602	PU59555-4	CAP HOUSING	
	CN603	PU59555-11	CAP HOUSING	
	CN604	PU59555-7	CAP HOUSING	
⚠	CP601	ICP-F25	CIRCUIT PROTECTOR	

— REGULATOR SECTION —

	Q851	2SB810H, J	TRANSISTOR	
	D851	1SS133	DIODE	
	D852	1SS133	DIODE	
	D853	1SS133	DIODE	
	R851	QRD161J-393	RESISTOR	39KΩ, 1/6W
	R852	QRD161J-102	RESISTOR	1KΩ, 1/6W
	L851	PU59152-100J	COIL	10μH
	L853	PU59152-101J	COIL	100μH
	K1	PU60281-5	FERRITE BEADS, EG	
	K2	PU60281-5	FERRITE BEADS, EG	
	K3	PU60281-5	FERRITE BEADS, EG	
	CN801	PU61044-12	CAP HOUSING	

— ON SCREEN SECTION —

	IC901	M50552-148SP	IC	
	IC951	M52684AP	IC	
	IC952	BU4013B	IC	
		or TC4013BP	IC	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	Q901	DTA114ES	TRANSISTOR	
	Q902	DTA114ES	TRANSISTOR	
	Q903	2SA933S(RS)	TRANSISTOR	
	or	2SA1267(YG)-TJK	TRANSISTOR	
	Q951	DTC114ES	TRANSISTOR	
	R901	QRD161J-471	RESISTOR	470Ω, 1/6W
	R902	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R903	QRD161J-681	RESISTOR	680Ω, 1/6W
	R904	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R905	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R906	QRD161J-471	RESISTOR	470Ω, 1/6W
	R907	QRD161J-471	RESISTOR	470Ω, 1/6W
	R908	QRD161J-392	RESISTOR	3.9KΩ, 1/6W
	R909	QRD161J-752	RESISTOR	7.5KΩ, 1/6W
	R911	QRD161J-622	RESISTOR	6.2KΩ, 1/6W
	R912	QRD161J-242	RESISTOR	2.4KΩ, 1/6W
	R916	QRD161J-123	RESISTOR	12KΩ, 1/6W
	R917	QRD161J-123	RESISTOR	12KΩ, 1/6W
	R918	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R919	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R920	QRD161J-105	RESISTOR	1MΩ, 1/6W
	R924	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R926	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R928	QRD161J-471	RESISTOR	470Ω, 1/6W
	R951	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R952	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R953	QRD161J-271	RESISTOR	270Ω, 1/6W
	R954	QRD161J-152	RESISTOR	1.5KΩ, 1/6W
	R955	QRD161J-154	RESISTOR	150KΩ, 1/6W
	R956	QRD161J-473	RESISTOR	47KΩ, 1/6W
	C901	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C902	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C903	QETC1CM-106	E CAPACITOR	10μF, 16V
	C904	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	C905	QAT3123-450	TRIM CAP, CHARACTOR POSITION	
	C906	QCSB1HJ-220	CAPACITOR	22PF, 50V
	C907	QCSB1HJ-330	CAPACITOR	33PF, 50V
	C908	QCSB1HJ-360	CAPACITOR	36PF, 50V
	C909	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C910	QCSB1HJ-270	CAPACITOR	27PF, 50V
	C911	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C912	QCSB1HJ-270	CAPACITOR	27PF, 50V
	C913	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C914	QETC1CM-106	E CAPACITOR	10μF, 16V
	C915	QCT25CH-150	CAPACITOR	15PF
	C916	QAT3123-200	TRIM CAP, BACK COLOR	
	C917	QCT25CH-5R0	CAPACITOR	5PF
	C921	QCBB1HJ-331	CAPACITOR	330PF, 50V
	C951	QFN31HJ-222	M CAPACITOR	0.0022μF, 50V
	C952	QCSB1HJ-220	CAPACITOR	22PF, 50V
	C953	QCXB1CN-152	CAPACITOR	0.0015μF, 16V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C954	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C955	QER61HM-105	E CAPACITOR	1μF, 50V
	C956	QETC1HM-106	E CAPACITOR	10μF, 50V
	C957	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C958	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C959	QETC1HM-335	E CAPACITOR	3.3μF, 50V
	C960	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	L901	PU54223-101K	COIL	100μH
	L902	PU59152-220J	COIL	22μH
	L903	PU59152-8R2J	COIL	8.2μH
	L904	PU59152-150J	COIL	15μH
	L905	PU59152-220J	COIL	22μH
	L906	PU59152-220J	COIL	22μH
⚠	CF951	PU60086	RESONATOR	
⚠	X901	PU60908	CRYSTAL RESONATOR	
	TP901	PU57545	TEST PIN	
	TP902	PU57545	TEST PIN	
	CN901	PU59555-7	CAP HOUSING	

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8. VIDEO UNIT BOARD ASSEMBLY ⟨05⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PB10256A-04	VIDEO UNIT BOARD ASSEMBLY
	IC1	PB20166G-01	Y MODULE BOARD ASSY
⚠	IC2	MSM6967RS	IC
	IC201	PB20227A	COL MODULE BOARD ASSY
	IC251	BA7106LS	IC
	or	XRA7106LS	IC
	Q1	DTA144EU	TRANSISTOR
	Q2	2SC2412K	TRANSISTOR
	Q3	DTC144EK	TRANSISTOR
	Q4	2SA1037K	TRANSISTOR
	Q5	2SC2412K	TRANSISTOR
	Q201	2SC2412K	TRANSISTOR
	Q202	2SC2412K	TRANSISTOR
	Q203	DTC114WK	TRANSISTOR
	Q204	2SC2412K	TRANSISTOR
	Q205	2SA1037K	TRANSISTOR
	Q251	DTC114WK	TRANSISTOR
	D1	1SS133	DIODE
	or	MA165	DIODE

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	D2	1SS133	DIODE	
	or	MA165	DIODE	
	D3	1SS133	DIODE	
	or	MA165	DIODE	
	D4	MA165	DIODE	
	or	1SS133	DIODE	
	D5	1SS292	DIODE	
	D6	1SS133	DIODE	
	or	MA165	DIODE	
	D7	1SS133	DIODE	
	or	MA165	DIODE	
	D9	RD9.1ES-T1B2	ZENER DIODE	
	or	UZ9.1BSB	ZENER DIODE	
	D10	1SS133	DIODE	
	or	MA165	DIODE	
	D201	1SS133	DIODE	
	or	MA165	DIODE	
	D202	1SS133	DIODE	
	or	MA165	DIODE	
	D203	1SS133	DIODE	
	or	MA165	DIODE	
	D251	1SS133	DIODE	
	or	MA165	DIODE	
	D252	1SS133	DIODE	
	or	MA165	DIODE	
	D253	1SS133	DIODE	
	or	MA165	DIODE	
	R1	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R2	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R3	QRSA08J-681YN	RESISTOR	680Ω, 1/10W
	R5	QRSA08J-562YN	RESISTOR	5.6KΩ, 1/10W
	R6	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R7	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
	R8	QRSA08J-273YN	RESISTOR	27KΩ, 1/10W
	R9	QRSA08J-394YN	RESISTOR	390KΩ, 1/10W
	R10	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R11	QRSA08J-221YN	RESISTOR	220Ω, 1/10W
	R12	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R13	QRSA08J-221YN	RESISTOR	220Ω, 1/10W
	R14	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R15	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R16	QVZ3518-222AZ	V RESISTOR, NC BALANCE	2.2KΩ
	or	QVZ3523-222AZ	V RESISTOR, NC BALANCE	2.2KΩ
	R17	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R18	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
⚠	R20	QRD161J-181	RESISTOR	180Ω, 1/6W
	R201	QRSA08J-183YN	RESISTOR	18KΩ, 1/10W
	R202	QRSA08J-332YN	RESISTOR	3.3KΩ, 1/10W
	R203	QRD161J-222	RESISTOR	2.2KΩ, 1/6W
	R204	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R205	QRD161J-223	RESISTOR	22KΩ, 1/6W
	R206	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R207	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R208	QRSA08J-682YN	RESISTOR	6.8KΩ, 1/10W
	R209	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R210	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R211	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R212	QRSA08J-152YN	RESISTOR	1.5KΩ, 1/10W
	R213	QRSA08J-331YN	RESISTOR	330Ω, 1/10W
	R214	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R215	QRSA08J-332YN	RESISTOR	3.3KΩ, 1/10W
	R216	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R217	QRSA08J-393YN	RESISTOR	39KΩ, 1/10W
	R218	QRSA08J-332YN	RESISTOR	3.3KΩ, 1/10W
	R219	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R220	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R221	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R222	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R223	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
	R224	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
	R251	QRSA08J-682YN	RESISTOR	6.8KΩ, 1/10W
	R252	QRSA08J-333YN	RESISTOR	33KΩ, 1/10W
	R253	QRD161J-273	RESISTOR	27KΩ, 1/6W
	R254	QRSA08J-914YN	RESISTOR	910KΩ, 1/10W
	R255	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R256	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
	C1	QCSA1HJ-220	CAPACITOR	22PF, 50V
	C2	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C3	QCSA1HJ-151	CAPACITOR	150PF, 50V
	C4	QETC1AM-226	E CAPACITOR	22μF, 10V
	C5	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C6	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C7	QETC1EM-335	E CAPACITOR	3.3μF, 25V
	C8	QEN60JM-336	NP E CAPACITOR	33μF, 6.3V
	C9	QETC1CM-106	E CAPACITOR	10μF, 16V
	C10	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C11	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C12	QEN61HM-224	NP E CAPACITOR	0.22μF, 50V
	C13	QCSA1HJ-120	CAPACITOR	12PF, 50V
	C14	QETC1EM-335	E CAPACITOR	3.3μF, 25V
	C15	QCVC1CN-103	CAPACITOR	0.01μF, 16V
	C16	QEN61HM-335	NP E CAPACITOR	3.3μF, 50V
	C17	QETC0JM-337	E CAPACITOR	330μF, 6.3V
	C18	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C19	QEN61HM-225	NP E CAPACITOR	2.2μF, 50V
	C20	QCSA1HJ-120	CAPACITOR	12PF, 50V
	C21	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C22	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C23	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C24	QETC1HM-104	E CAPACITOR	0.1μF, 50V
	C25	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C26	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C27	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C28	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C29	QETC1AM-476	E CAPACITOR	47μF, 10V
	C201	QCSA1HJ-470	CAPACITOR	47PF, 50V
	C202	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C203	QCSA1HJ-820	CAPACITOR	82PF, 50V
	C204	QETC1HM-475	E CAPACITOR	4.7μF, 50V
	C205	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C206	QFN31HJ-224	M CAPACITOR	0.22μF, 50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C207	QFN31HJ-563	M CAPACITOR	0.056μF, 50V
	C208	QETC0JM-337	E CAPACITOR	330μF, 6.3V
	C209	QCC31CJ-223	CAPACITOR	0.022μF, 16V
	C210	QER60JM-107	E CAPACITOR	100μF, 6.3V
	C211	QER61CM-106	E CAPACITOR	10μF, 16V
	C212	QETC1HM-224	E CAPACITOR	0.22μF, 50V
	C213	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C214	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C215	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C218	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C219	QCC11CJ-473	CAPACITOR	0.047μF, 16V
	C220	QCBB1HJ-121	CAPACITOR	120PF, 50V
	C221	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C223	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C251	QETC1CM-106	E CAPACITOR	10μF, 16V
	C252	QFN31HJ-471	M CAPACITOR	470PF, 50V
	C253	QCSA1HJ-270	CAPACITOR	27PF, 50V
	C254	QETC1HM-335	E CAPACITOR	3.3μF, 50V
	C255	QCYA1HK-472	CAPACITOR	0.0047μF, 50V
	C256	QCYA1HK-471	CAPACITOR	470PF, 50V
	C257	QCSA1HJ-5R0	CAPACITOR	5PF, 50V
	C258	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C259	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C260	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C261	QCSA1HJ-200	CAPACITOR	20PF, 50V
	C262	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C263	QETB0JM-477	E CAPACITOR	470μF, 6.3V
	C264	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C265	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	L1	PU59152-121J	COIL	120μH
	L2	PU59152-680J	COIL	68μH
	L3	PU48530-101K	COIL	100μH
	L4	PU59152-R22J	COIL	0.22μH
	L5	PU59152-101J	COIL	100μH
	L6	PU59152-R22J	COIL	0.22μH
	L201	PU48530-271J	COIL	270μH
	L202	PU59153-822J	COIL	8.2mH
⚠	L203	PU48530-151J	COIL	150μH
	L205	PU59152-150J	COIL	15μH
	L251	PU59152-330J	COIL	33μH
	L252	PU48530-101K	COIL	100μH
	EQ2	PU60162-2	EQUALIZER	
		or PU60162	EQUALIZER	
	EQ201	PU53501-11	EQUALIZER	
		or PU53501-6	EQUALIZER	
	LPF1	PU58021-3	LOW PASS FILTER	
		or PU60715	LOW PASS FILTER	
		or PU58021-2	LOW PASS FILTER	
	LPF2	PU60716	LOW PASS FILTER	
	LPF201	PU58022	LOW PASS FILTER	
	BPF201	PU60654	BAND PASS FILTER	
		or PU60654-2	BAND PASS FILTER	
	BPF202	PU60713	BAND PASS FILTER	
	CF201	PU57073	CERAMIC FILTER	
	DL201	PU60340-2	COMB FILTER	
		or PU60490	COMB FILTER	
		or PU58971-3	2H DELAY LINE	
	LC251	PU60655	COIL, SECAM DET	
⚠	X201	PU60653	CRYSTAL UNITS	
	SLD1	PQ42994	SHIELD PLATE	
	SLD2	PQ42995	SHIELD CASE	
	SLD3	PQ42996	SHIELD COVER	
	TP21	PU56347	TEST POINT	
	CN1	PU60330-113	CONNECTOR	
	CN2	PU60330-113	CONNECTOR	
	CN3	PU60330-110	TERMINAL	

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9. IF BOARD ASSEMBLY ⟨07⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PB10367N	IF BOARD ASSEMBLY, E
		PB10367M	IF BOARD ASSEMBLY, EG
	IC1	M51365SP	IC
	Q1	2SA1532(C)	TRANSISTOR
	Q2	2SC3354	TRANSISTOR
	Q3	2SC1317(RS)	TRANSISTOR
	Q4	2SA933S(S)	TRANSISTOR
	Q5	2SD1819A(RS)	TRANSISTOR
	Q6	FMS2	TRANSISTOR
	Q7	2SC1740(RS)	TRANSISTOR
		or 2SC3311A(RS)	TRANSISTOR
		or 2SC536SPA(FG)	TRANSISTOR
	Q9	2SD1450S,T	TRANSISTOR
		or 2SD1468S(RSE)	TRANSISTOR
	Q11	2SC1740(RS)	TRANSISTOR
		or 2SC536SPA(FG)	TRANSISTOR
		or 2SC3311A(RS)	TRANSISTOR
	Q12	DTC144EU	TRANSISTOR
	Q13	DTC144ES	TRANSISTOR
		or UN4213	TRANSISTOR
		or 2SC3399	TRANSISTOR
	Q15	2SK381(C)	FE TRANSISTOR
	D1	MTZ10D	ZENER DIODE

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	D6	DA204U	DIODE	
	R1	NRD718J-750NBU	RESISTOR	75Ω, 1/8W
	R4	NRD718J-392NBU	RESISTOR	3.9KΩ, 1/8W
	R5	NRD718J-151NBU	RESISTOR	150Ω, 1/8W
	R6	NRD718J-272NBU	RESISTOR	2.7KΩ, 1/8W
	R7	NRD718J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R8	NRD718J-681NBU	RESISTOR	680Ω, 1/8W
	R10	NRD718J-471NBU	RESISTOR	470Ω, 1/8W
	R11	NRD718J-101NBU	RESISTOR	100Ω, 1/8W
	R14	NRD718J-101NBU	RESISTOR	100Ω, 1/8W
	R15	NRD718J-271NBU	RESISTOR	270Ω, 1/8W
	R17	NRD718J-562NBU	RESISTOR	5.6KΩ, 1/8W
	R18	NRD718J-332NBU	RESISTOR	3.3KΩ, 1/8W
	R19	NRD718J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R20	NRD718J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R21	QVZ3518-472	V RESISTOR, RF AGC	4.7KΩ
	or	QVZ3523-472	V RESISTOR, RF AGC	4.7KΩ
	R22	NRD718J-824NBU	RESISTOR	820KΩ, 1/8W
	R24	NRD718J-821NBU	RESISTOR	820Ω, 1/8W
	R25	NRD718J-471NBU	RESISTOR	470Ω, 1/8W
	R29	NRD718J-681NBU	RESISTOR	680Ω, 1/8W
	R30	NRD718J-331NBU	RESISTOR	330Ω, 1/8W
	R31	NRD718J-332NBU	RESISTOR	3.3KΩ, 1/8W
	R32	NRD718J-103NBU	RESISTOR	10KΩ, 1/8W
	R34	NRD718J-470NBU	RESISTOR	47Ω, 1/8W
	R35	NRD718J-561NBU	RESISTOR	560Ω, 1/8W
	R36	NRD718J-561NBU	RESISTOR	560Ω, 1/8W
	R37	NRD718J-121NBU	RESISTOR	120Ω, 1/8W
	R38	NRD718J-182NBU	RESISTOR	1.8KΩ, 1/8W
	R39	NRD718J-272NBU	RESISTOR	2.7KΩ, 1/8W
	R40	QVZ3518-103	V RESISTOR, COLOR LEVEL	10KΩ
	or	QVZ3523-103	V RESISTOR, COLOR LEVEL	10KΩ
	R45	NRD718J-471NBU	RESISTOR	470Ω, 1/8W
	R46	NRD718J-104NBU	RESISTOR	100KΩ, 1/8W
	R47	NRD718J-153NBU	RESISTOR	15KΩ, 1/8W
	R48	NRD718J-392NBU	RESISTOR	3.9KΩ, 1/8W
	R49	NRD718J-103NBU	RESISTOR	10KΩ, 1/8W
	R50	NRD718J-182NBU	RESISTOR	1.8KΩ, 1/8W
	R51	NRD718J-223NBU	RESISTOR	22KΩ, 1/8W
	R52	NRD718J-223NBU	RESISTOR	22KΩ, 1/8W
	R53	NRD718J-103NBU	RESISTOR	10KΩ, 1/8W
	R54	NRD718J-822NBU	RESISTOR	8.2KΩ, 1/8W
	R56	NRD718J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R57	NRD718J-153NBU	RESISTOR	15KΩ, 1/8W
	R82	NRD718J-680NBU	RESISTOR	68Ω, 1/8W
	R83	NRD718J-331NBU	RESISTOR	330Ω, 1/8W
	R84	NRD718J-393NBU	RESISTOR	39KΩ, 1/8W
	R85	NRD718J-752NBU	RESISTOR	7.5KΩ, 1/8W
	R86	NRD718J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R87	NRD718J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R88	NRD718J-103NBU	RESISTOR	10KΩ, 1/8W
	R100	NRD718J-105NBU	RESISTOR	1MΩ, 1/8W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R101	NRD718J-222NBU	RESISTOR	2.2KΩ, 1/8W
	R102	NRD718J-222NBU	RESISTOR	2.2KΩ, 1/8W
	C2	NCT02CH-3R9NBR	CAPACITOR	3.9PF
	C3	QCT25HH-101	CAPACITOR	100PF
	C4	NCT02CH-4R7NBR	CAPACITOR	4.7PF
	C5	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C6	NCX71CM-222NBR	CAPACITOR	0.0022μF, 16V
	C7	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C8	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C10	QETC1CM-107	E CAPACITOR	100μF, 16V
	C11	NCY71CM-103NBR	CAPACITOR	0.01μF, 16V
	C13	NCX71CM-222NBR	CAPACITOR	0.0022μF, 16V
	C14	PU57601-474ME	E CAPACITOR	0.47μF
	C15	QETC1CM-336	E CAPACITOR	33μF, 16V
	C16	NCX71CM-222NBR	CAPACITOR	0.0022μF, 16V
	C17	NCF71EZ-223NBR	CAPACITOR	0.022μF, 25V
	C19	NCY71CM-103NBR	CAPACITOR	0.01μF, 16V
	C20	NCS71HJ-100NBR	CAPACITOR	10PF, 50V
	C22	QETC1HM-105	E CAPACITOR	1μF, 50V
	C23	QCC11EK-223	CAPACITOR	0.022μF, 25V
	C24	QETC1HM-105	E CAPACITOR	1μF, 50V
	C25	NCX71CM-222NBR	CAPACITOR	0.0022μF, 16V
	C27	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C29	NCS71HJ-470NBR	CAPACITOR	47PF, 50V
	C31	QETC1HM-335	E CAPACITOR	3.3μF, 50V
	C32	NCF71EZ-223NBR	CAPACITOR	0.022μF, 25V
	C33	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C50	QETC1CM-336	E CAPACITOR	33μF, 16V
	C56	QETC1CM-336	E CAPACITOR	33μF, 16V
	C58	NCS71HJ-100NBR	CAPACITOR	10PF, 50V
	C63	NCB71HK-102NBR	CAPACITOR	0.001μF, 50V
	C64	NCB71HK-391NBR	CAPACITOR	390PF, 50V
	L2	PU60025-R82	COIL, EG	0.82μH
		PU60025-1R0	COIL, E	1.0μH
	L3	PU60025-1R5	COIL	1.5μH
	L4	PU59152-8R2J	COIL	8.2μH
	L5	PU59152-220J	COIL	22μH
	L6	PU59152-6R8K	COIL	6.8μH
	or	PU59152-6R8J	COIL	6.8μH
	L7	PU59152-R22K	COIL	0.22μH
	L9	PU59152-6R8K	COIL	6.8μH
	CF1	PU60774-2	CERAMIC FILTER	
	CF2	PU59242-2	CERAMIC FILTER	
	CF3	PU32990-2	CERAMIC FILTER	
	CF5	PU32990-4	CERAMIC FILTER	
	SAW1	PU35557-7	SAW FILTER	
	T1	PU60042-2	COIL	
	T2	PU60497	IF. TRANSFORMER	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	T5	PU60046	IF. TRANSFORMER	
	JP1	PU59935-16	TERMINAL	

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10. TUNER CONTROL BOARD ASSEMBLY ⟨08⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB20326L-01	TU/CTL BOARD ASSEMBLY, EG	
		PB20326M-01	TU/CTL BOARD ASSEMBLY, E	
⚠	TNR1	PERF0024	UHF/VHF TUNER, E	
⚠		PERF0023	UHF/VHF TUNER, EG	
	Q2	2SD1863(QR)	TRANSISTOR	
	or	2SC3243D,E	TRANSISTOR	
	Q3	2SB810H,J	TRANSISTOR	
	Q4	DTC144ES	TRANSISTOR	
	or	UN4213	TRANSISTOR	
	or	2SC3399	TRANSISTOR	
	D1	HZT33-02	ZENER DIODE	
	D2	E-452-2	DIODE	
	D3	RD5.6ES-T1B3	ZENER DIODE	
	or	MTZ5.6CT-77	ZENER DIODE	
	D4	1SS133	DIODE	
	D5	1SS133	DIODE	
	R2	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R3	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R7	QRD161J-271	RESISTOR	270Ω, 1/6W
	R8	QRD161J-153	RESISTOR	15KΩ, 1/6W
	R9	QRD161J-182	RESISTOR	1.8KΩ, 1/6W
	R32	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R36	QRD161J-560	RESISTOR	56Ω, 1/6W
	C1	QETC1CM-107	E CAPACITOR	100μF, 16V
	C2	QETC1HM-225	E CAPACITOR	2.2μF, 50V
	C4	QCBB1HK-102	CAPACITOR	0.001μF, 50V
	C5	QCBB1HK-102	CAPACITOR	0.001μF, 50V
	C6	QCBB1HK-181	CAPACITOR	180PF, 50V
	C7	QCBB1HK-102	CAPACITOR	0.001μF, 50V
	C14	QETC1CM-336	E CAPACITOR	33μF, 16V
	C15	QETC1CM-107	E CAPACITOR	100μF, 16V
	C16	QETC1CM-106	E CAPACITOR	10μF, 16V
	C23	QETC1HM-106	E CAPACITOR	10μF, 50V
	C28	QETC1HM-225	E CAPACITOR	2.2μF, 50V
	C29	QCBB1HJ-910	CAPACITOR	91PF, 50V
	L1	PU59152-R22K	COIL	0.22μH
	L2	PU59152-6R8K	COIL	6.8μH
	L4	PU59152-1R0K	COIL	1.0μH
	L5	PU59152-100J	COIL	10μH
	L7	PU59152-2R7K	COIL	2.7μH
	L9	PU59152-5R6J	COIL	5.6μH
	HD1	PU36416-1-3	HOLDER	
	CN1	PU58844-7	CAP HOUSING	
	CN2	PU59555-7	CAP HOUSING	
⚠	CP1	ICP-F10	CIRCUIT PROTECTOR	

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11. AUDIO CONTROL HEAD BOARD ⟨12⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PWB1	PB40068	A/CTL HEAD PWB
	CN1	PU58844-107	CAP HOUSING

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12. TIMER/DISPLAY//SW BOARD ASSEMBLY ⟨21⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PB10364A-02	T/D/S BOARD ASSY, EG
		PB10364C-02	T/D/S BOARD ASSY, E
	IC1	UPD75216ACW-A35	IC
	IC2	IC-PST523H-2	IC
	IC101	GP1U541X	INFRARED RAYS UNIT
	Q1	2SC3199(G)-TJK	TRANSISTOR
	Q1	2SC3199(G)	TRANSISTOR
	or	2SC3311A(RS)	TRANSISTOR
	D1	RD9.1ES-T1B2	ZENER DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D4	11ES2	DIODE
	D5	11ES2	DIODE
	D6	11ES2	DIODE
	or	ERA15-02	DIODE
	D101	SLR-55VC3F	LE DIODE, POWER
	D102	SLH-34MC3F	LE DIODE, PLAY
	D103	SLH-34DC3F	LE DIODE, PAUSE
	D104	SLH-34VC3F	LE DIODE, REC
	D105	SLH-34MC3F	LE DIODE, A. TRACK
	D111	1SS132	DIODE
	D112	1SS132	DIODE
	D115	1SS132	DIODE

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	D116	1SS132	DIODE	
	D117	1SS132	DIODE	
	D118	1SS132	DIODE	
	D129	1SS132	DIODE	
	D131	1SS132	DIODE, EG	
	D133	1SS132	DIODE	
	D140	1SS132	DIODE	
	R1	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R2	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R3	QRD161J-273	RESISTOR	27KΩ, 1/6W
	R4	QRD161J-682	RESISTOR	6.8KΩ, 1/6W
	R5	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R6	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R7	QRD161J-102	RESISTOR	1KΩ, 1/6W
	R8	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R9	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R10	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R11	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R12	QRD161J-333	RESISTOR	33KΩ, 1/6W
	R13	QRD161J-271	RESISTOR	270Ω, 1/6W
	R14	QRD161J-271	RESISTOR	270Ω, 1/6W
	R15	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R16	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R17	QRD161J-472	RESISTOR	4.7KΩ, 1/6W
	R25	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R26	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R30	QRD161J-224	RESISTOR	220KΩ, 1/6W
	R31	QRD161J-151	RESISTOR, E	150Ω, 1/6W
	R32	QRD161J-271	RESISTOR	270Ω, 1/6W
	R33	QRD161J-271	RESISTOR	270Ω, 1/6W
	R39	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R40	QRD161J-271	RESISTOR	270Ω, 1/6W
	R41	QRD161J-103	RESISTOR	10KΩ, 1/6W
	R42	QRD161J-561	RESISTOR	560Ω, 1/6W
	R43	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R44	QRD161J-104	RESISTOR	100KΩ, 1/6W
	R101	QRD161J-271	RESISTOR	270Ω, 1/6W
	R102	QRD161J-271	RESISTOR	270Ω, 1/6W
	R103	QRD161J-271	RESISTOR	270Ω, 1/6W
	R104	QRD161J-271	RESISTOR	270Ω, 1/6W
	R105	QRD161J-271	RESISTOR	270Ω, 1/6W
	R402	PU60884	V RESISTOR, PICTURE SHARPNESS	
	RA1	QRB047J-333	RESISTOR ARRAY	
	or	QRB049J-333	RARRAY	
	C3	QCVB1CN-103	CAPACITOR	0.01µF, 16V
	C4	QER61CM-106	E CAPACITOR	10µF, 16V
	C5	QEA40HZ-104	E CAPACITOR (DOUBLE), EG	0.1µF, 5.5V
		QEA40HZ-105	E CAPACITOR (DOUBLE), E	1µF, 5.5V
	or	PU60676-104	E CAPACITOR, EG	0.1µF
	C6	QAT3123-200	TRIMMER CAPACITOR, CLOCK	
	C7	QCSB1HJ-120	CAPACITOR	12PF, 50V
	C11	QER61CM-106	E CAPACITOR	10µF, 16V
	C13	QCVB1CN-103	CAPACITOR	0.01µF, 16V
	C14	QER61HM-106	E CAPACITOR	10µF, 50V
	C15	QCBB1HJ-101	CAPACITOR	100PF, 50V
	C16	QCBB1HJ-101	CAPACITOR	100PF, 50V
	C17	QCF11HP-473	CAPACITOR	0.047µF, 50V
	C18	QER61CM-106	E CAPACITOR	10µF, 16V
	C19	QER61CM-106	E CAPACITOR	10µF, 16V
⚠	X1	PU60226-4	CRYSTAL RESONATOR	
	S1	PU60392-2Z	TACT SWITCH, POWER	
	S2A	PU59447	TACT SWITCH, STOP/EJECT	
	S3A	PU59447	TACT SWITCH, FF/SEARCH+	
	S4A	PU59447	TACT SWITCH, REW/SEARCH−	
	S6A	PU59447	TACT SWITCH, REC/ITR	
	S7A	PU59447	TACT SWITCH, PLAY/X2	
	S8A	PU59447	TACT SWITCH, PAUSE	
	S18	PU60392-2Z	TACT SWITCH, PROGRAM	
	S19	PU59447	TACT SWITCH, START	
	S21	PU60392-2Z	TACT SWITCH, ITR (START)	
	S22	PU60392-2Z	TACT SWITCH, CANCEL/SKIP/RESET	
	S23	PU60392-2Z	TACT SWITCH, SELECT	
	S24	PU60392-2Z	TACT SWITCH, TIMER	
	S25	PU60392-2Z	TACT SWITCH, SET+/TRACK+	
	S26	PU60392-2Z	TACT SWITCH, SET−/TRACK−	
	S28	PU60392-2Z	TACT SWITCH, DISP OFF	
	S29	PU60392-2Z	TACT SWITCH, CH SEARCH	
	S30	PU60392-2Z	TACT SWITCH, CH SET/VPS	
	S32	PU60392-2Z	TACT SWITCH, COUNTER/REMAIN/DATE	
	S49	PU60392-2Z	TACT SWITCH, CH+	
	S50	PU60392-2Z	TACT SWITCH, CH−	
	S405	PU58487-1-1	SLIDE SWITCH, REPEAT	
	FDP1	PEDP0008-02	FLUORESCENT DISPLAY PANEL, EG	
		PEDP0008	FLUORESCENT DISPLAY PANEL, E	
	CL1	PU59311-2	WIRE CLAMP	
	CL2	PU56729-2	WIRE CLAMP	
	HD1	PQ31331-1-1	FDP HOLDER (R)	
	HD2	PQ31330-1-1	FDP HOLDER (L)	
	HD3	PQM30038-2-2	LED HOLDER	
	HD4	PQ40795-5-2	LED HOLDER	
	TP1	PU56008	TEST-PIN	
	CN1	PU58844-4	CAP HOUSING	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	CN2	PU59555-11	CAP HOUSING	
	CN3	PU59555-7	CAP HOUSING	
⚠	CP1	ICP-F10	CIRCUIT PROTECTOR	

13. UPPER DRUM BOARD ⟨41⟩

PWB1	PDM3017	BOARD (UPPER DRUM)	

14. PRE/REC AMP BOARD ASSEMBLY ⟨43⟩

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB10247L	PRE/REC BOARD ASSEMBLY	
	IC1	AN3386NK-A	IC	
	Q1	2SA1576(QRS)	TRANSISTOR	
	Q2	2SC4081(QRS)	TRANSISTOR	
	Q3	2SC4081(QRS)	TRANSISTOR	
	D2	MA141K	DIODE	
	D4	1SS133	DIODE	
	or	MA165	DIODE	
	R1	QRSA08J-102YN	RESISTOR	1KΩ, 1/10W
	R2	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R3	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R4	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R5	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R6	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
	R7	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R8	QRSA08J-222YN	RESISTOR	2.2KΩ, 1/10W
	R9	QRSA08J-681YN	RESISTOR	680Ω, 1/10W
	R10	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
	R11	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
	R12	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
	R14	QRSA08J-122YN	RESISTOR	1.2KΩ, 1/10W
	R16	QRSA08J-153YN	RESISTOR	15KΩ, 1/10W
	R17	QRSA08J-562YN	RESISTOR	5.6KΩ, 1/10W
	R18	QRSA08J-562YN	RESISTOR	5.6KΩ, 1/10W
	R19	QRSA08J-334YN	RESISTOR	330KΩ, 1/10W
	R20	QRSA08J-103YN	RESISTOR	10KΩ, 1/10W
	R21	QRSA08J-393YN	RESISTOR	39KΩ, 1/10W
	R22	QRSA08J-153YN	RESISTOR	15KΩ, 1/10W
	R23	QRSA08F-363YN	RESISTOR	36KΩ, 1/10W
	or	NRVA62D-363N	RESISTOR	36KΩ, 1/16W
	R26	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
	R28	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
	R29	QRSA08J-271YN	RESISTOR	270Ω, 1/10W
	R30	QRSA08J-104YN	RESISTOR	100KΩ, 1/10W
	R31	QRD161J-474	RESISTOR	470KΩ, 1/6W
	C1	QER60JM-476	E CAPACITOR	47μF, 6.3V
	C2	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C3	QCSA1HJ-681	CAPACITOR	680PF, 50V
	C4	QCSB1HJ-150	CAPACITOR	15PF, 50V
	C5	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C7	QCSA1HJ-270	CAPACITOR	27PF, 50V
	C8	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C9	QCSA1HJ-910	CAPACITOR	91PF, 50V
	C10	QCSA1HJ-471	CAPACITOR	470PF, 50V
	C11	QCSA1HJ-390	CAPACITOR	39PF, 50V
	C12	QCSA1HJ-680	CAPACITOR	68PF, 50V
	C13	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C14	QCSA1HJ-391	CAPACITOR	390PF, 50V
	C15	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C16	QER61CM-476	E CAPACITOR	47μF, 16V
	C17	QCFA1HZ-333	CAPACITOR	0.033μF, 50V
	C18	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C19	QCFA1EZ-104	CAPACITOR	0.1μF, 25V
	C20	QCSA1HJ-101	CAPACITOR	100PF, 50V
	C21	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C22	QCSA1HJ-101	CAPACITOR	100PF, 50V
	C23	QCSA1HJ-101	CAPACITOR	100PF, 50V
	C24	QCY81EK-104	CAPACITOR	0.1μF, 25V
	C26	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C27	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C28	QCY81EK-104	CAPACITOR	0.1μF, 25V
	C29	QCY81EK-104	CAPACITOR	0.1μF, 25V
	C30	QER61AM-685	E CAPACITOR	6.8μF, 10V
	C31	QCF81EZ-224	CAPACITOR	0.22μF, 25V
	C32	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C33	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C38	QCSA1HJ-2R0	CAPACITOR	2PF, 50V
	L1	PU54223-101K	COIL	100μH
	L2	PU59988-560JY	COIL	56μH
	L3	PU59988-220JY	COIL	22μH
	L4	PU59988-560JY	COIL	56μH
	L5	PU59988-470JY	COIL	47μH
	L6	PU59988-121JY	COIL	120μH
	L7	PU59988-220JY	COIL	22μH
	L8	PU54223-470K	COIL	47μH
	SLD1	PQ32216-1-1	SHIELD CASE (1)	
	CN1	PU58844-106	CAP HOUSING	
	CN2	PU59555-106	CAP HOUSING	
	CN4	PU59974-8	CAP HOUSING	

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15. DECK TERMINAL BOARD ASSEMBLY 〈51〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB10320A-02	DECK TERMINAL BOARD ASSY	
	Q1	PU60625	END SENSOR	
	R1	QRD161J-202	RESISTOR	2KΩ, 1/6W
	R3	QRD161J-331	RESISTOR	330Ω, 1/6W
	R4	QRD161J-331	RESISTOR	330Ω, 1/6W
	R5	QRD161J-331	RESISTOR	330Ω, 1/6W
	R7	QRD161J-202	RESISTOR	2KΩ, 1/6W
	R8	NTH5D473KB	THERMISTOR	
	or	ERT-D2ZHK473S	NEGA THERMISTOR	
	C1	QCVB1CM-103	CAPACITOR	0.01μF, 16V
	PS1	PS5705HR	PH INTERRUPTER	
	PS2	PS5705HR	PH INTERRUPTER	
	CN1	PEMC0722-017	WIRE TRAP	
	or	PEMC0753-017	WIRE TRAP	
	CN2	PU60642	7PIN CONNECTOR	
	CN3	PU60640	4PIN CONNECTOR	

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16. LOADING MDA BOARD ASSEMBLY 〈55〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA2	PB10320A2-01	LOADING MDA BOARD ASSY	
⚠	IC1	BA6418N	IC	
⚠	or	XRA6418N	IC	
	C1	QETA1CM-336	E CAPACITOR	33μF, 16V
	CN1	PU59555-104	CAP HOUSING	

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17. CASSETTE HOUSING BOARD 〈56〉

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWB1	PB40041-01-01	CASSETTE HOUSING BOARD	
	Q2	PN268VI-NC	PHOTO TRANSISTOR	
	C1	QCC11EJ-103	CAPACITOR	0.01μF, 25V
	PHS3	PU60629	CASS. SENSOR	
	CN2	PU60639	CONNECTOR (4PIN)	

SECTION 6
TECHNICAL INFORMATION

6.1 CIRCUIT CONTROL SYSTEM

1. IC601 pin function (Mechacon)

Pin No.	Symbol		I/O format	Label	I/O	Contents
1	Port 6	3	C-MOS	LCM1	O	LOADING MOTOR DRIVE
2		2		LCM2		
3		1		DRUM CTL	O	SPECIAL PB H CORRECTION
4		0		CAP CTL		CAPSTAN MOTOR SERVO (FF/REW MODE)
5	Port 4	7	N-ch OPEN DRAIN	FM DET	I	Sawtooth waveform (Auto TR Data) /|/|/
6		6		THERM		THERMIC CORRECTION
7		5		MODE SENS 1	I	MECHANISM MODE DETECTION
8		4		〃 2		
9	Port 3	7		〃 3		
10		6		CLK	I	TM (TIMER/M-CTL CPU) bus Data : CLOCK : 16 bit
11		5		DATA	I/O	
12		4		REC SAFE	I	REC SAFETY SW ON : L
13		3		CAP REV	O	CAPSTAN MOTOR REV MODE : L
14		2		SERVO	O	CAPSTAN MOTOR SERVO
15		1		CAP FG	I	MODE DETECT, BACK SPACE COUNT, TAPE REMAIN
16		0		CTL PULSE	I	MODE DETECT, BLANK DETECT
17	Port 5	7	C-MOS	LOCK DET	I	TUNING DATA OUTPUT CHECK
18		6		PAUSE	O	CAPSTAN MOTOR SERVO (CAPSTAN BRAKE)
19		5		AMS	O	HEAD SELECT (Auto/Manual/Slow)
20		4		V PULSE	O	V PULSE OUTPUT (V JITTER CORRECTION)
21	P5 3/T/ED3			DFF	I	DRUM ROTATION DETECT/REC TIMING CONTROL (HEAD SW)
22	CN Vss		—	CN Vss	I	GND (ALWAYS GND)
23	RESET			RESET		RESET AT CONNECT VCR TO AC
24	X IN			X IN	I	MAIN SYSTEM CLOCK (8 MHz)
25	X OUT			X OUT	O	
26	Vss			Vss	—	GND
27	Port 5	2	C-MOS	START SENS	I	START SENSOR, LEADER TAPE DETECT (DET ON : L)
28		1		TU FG	I	REEL ROTATION DETECT, TAPE REMAIN
29		0		SP FG		
30	Port 1	5	N-ch OPEN DRAIN	R. PAUSE	I	REMOTE PAUSE (PAUSE ON : L)
31		4		CASS	I	CASSETTE SENSOR (CASS IN : _⎍_)
32		3		AUX	O	AUX MODE : L
33		2		END SENS	I	END SENSOR, TRAILER TAPE DETECT (DET ON : L)
34		1		REC ST	O	REC START ON : L
35		0		REC	O	REC MODE : L
36	Port 0	7		EE	O	EE MODE : L
37		6		P CTL		POWER CONTROL (P. ON : L)
38		5		P MUTE		PICTURE MUTE CONTROL (MUTE ON : L)
39		4		SP		SP MODE : L (NOT USED)
40		3		SYNC DET	I	SYNC DETECT (No signal : H)/PICTURE MUTE CONTROL
41		2		PLL DATA	O	TUNING DATA OUTPUT
42		1		TEXT		TEXT MODE : L
43		0		A MUTE		AUDIO MUTE CONTROL (MUTE ON : H)
44	Port 2	7	C-MOS	V UP	O	MOTOR DRIVE VOLTAGE CONTROL (Norm : L)
45		6		VIDEO	—	NC
46		5		TU CTL	O	TUNER CTL (ON : H)
47		4		M CE	O	MEMORY IC CHIP ENABLE
48		3		M DATA	I/O	MEMORY DATA WRITE/READ
49		2		CLK	O	CLOCK
50		1		S. DATA	O	SERVO IC CONTROL DATA
51		0		DUTY I/O	I/O	INDEX DATA WRITE/READ (NO : L)
52	Vcc			Vcc	—	for the SYSTEM CONTROL

Table 6-1 IC601 pin functions

2. IC1 pin function (Timer)

Pin No.	Symbol	Label	I/O	Contents
1	S3	Sd	O	SEGMENT DISPLAY DATA/KEY SCAN PULSE OUTPUT / "
2	S2	Sc		
3	S1	Sb		
4	So	Sa		
5	P00/INT4	POWER DOWN	I	POWER DOWN DETECT (DETECT NO : L)
6	P01/SCK	OS CLK	O	CLOCK
7	P02/SD	OS DATA		ON SCREEN DATA (8 bit)
8	P03/SI	TEST	I	TEST POINT (CLOCK ADJUST/FDP CHECK/X10 SPEED set)
9	P10/INT0	REMOTE	I	REMOTE DATA 16 bit SERIAL DATA (A/B code)
10	P11/INT1	NC	–	NC
11	P12/INT2	NC		
12	P13/T10	CNT PLS	I	COUNTER DATA
13	P20	KS0	I	KEY SCAN DATA INPUT
14	P21	KS1		
15	P22	KS2		
16	P23/BUZ	KS3		
17	P30	M/C DATA	I/O	TM (TIMER/M-CTL CPU) bus : 16 bit DATA
18	P31	M/C CLK	O	: CLOCK
19	P32	SDA	I/O	VIDEO PROGRAMING SYSTEM : I^2C Bus
20	P33	SCL	O	" : CLOCK
21	P60	OS CE	O	ON SCREEN CHIP ENABLE
22	P61	OS RESET		ON SCREEN IC RESET
23	P62	NC	–	NC
24	P63	NC		
25	P40	POWER	O	LED DRIVE (LED ON : L)
26	P41	PLAY		
27	P42	PAUSE		
28	P43	REC		
29	PP0	NC	–	NC
30	X1	X1	I	MAIN SYSTEM CLOCK (4.19 MHz)
31	X2	X2	O	
32	Vss	Vss	–	GND
33	XT1	XT1	I	GND (ALWAYS GND)
34	XT2	NC	–	NC
35	P50	NC		
36	P51	NC		
37	P52	AUTO TRACK	O	LED DRIVE (LED ON : L)
38	P53	PROG	O	BLUE BACK MODE : H
39	RESET	RESET	I	RESET AT CONNECT VCR TO AC
40	T0	4G	O	COLUMN DISPLAY DATA
41	T1	5G		
42	T2	6G		
43	T3	7G		
44	T4	1G		
45	T5	2G		
46	T6	3G		
47	T7	8G		
48	T8	9G		
49	T9	NC	–	NC
50	T10/S15/PH3	SP	O	/KEY SCAN PULSE OUTPUT SEGMENT DISPLAY DATA/ "
51	T11/S14/PH2	So		
52	T12/S13/PH1	Sn		
53	T13/S12/PH0	Sm		
54	T14/S11	Sl		
55	T15/S10	Sk		
56	VLOAD	VLOAD	I	−30 V For the FDP DRIVE
57	VPRE	VPRE		−5 V
58	S9	Sj	O	SEGMENT DISPLAY DATA /KEY SCAN PULSE OUTPUT / " / " / "
59	S8	Si		
60	S7	Sh		
61	S6	Sg		
62	S6	Sg		
63	S4	Se		
64	VDD	VDD	–	5 V For the SYSTEM CONTROL

Table 6-2 IC1 pin functions